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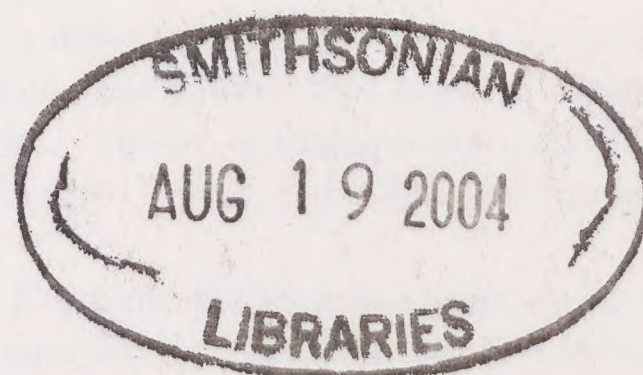
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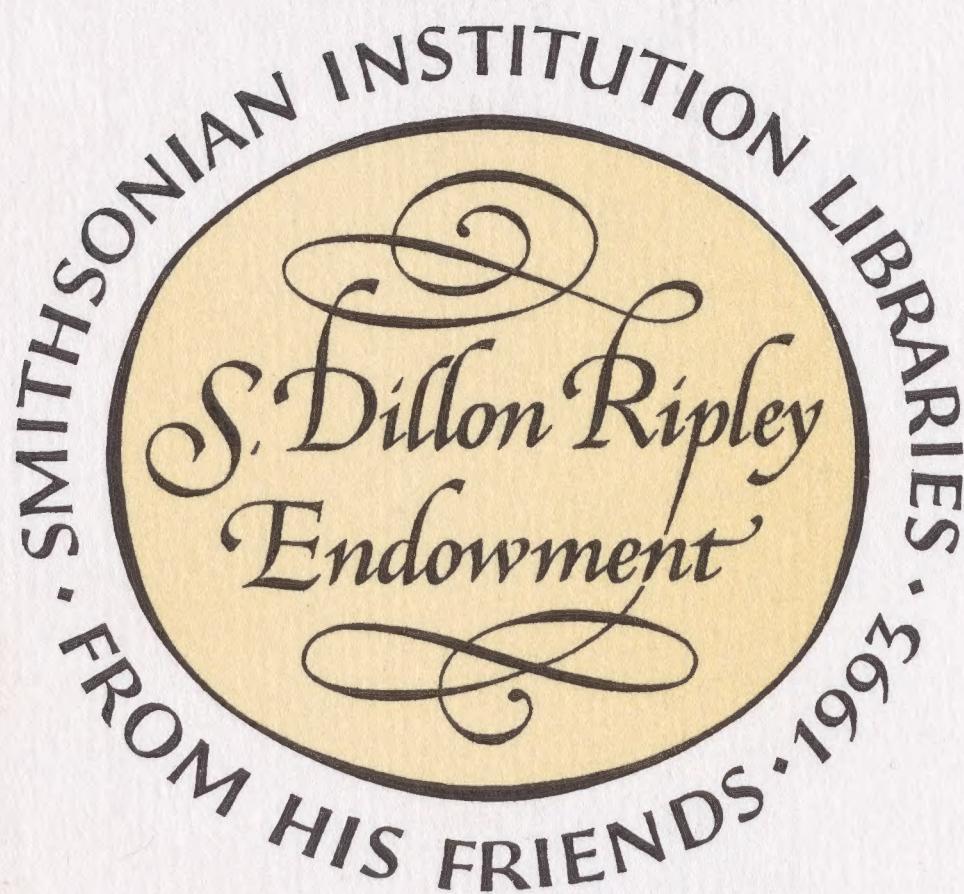


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A revisional essay of world genus-group taxa of Aphodiinae (Coleoptera Aphodiidae)

Abstract - Too many genus-group taxa into the subfamily Aphodiinae make high the difficulty to ascribe correctly a species to one of them. This inconvenient is often increased lacking, except for the generic taxa recently described, of adequate diagnoses and iconography.

Some recent papers show the importance of simultaneous and compare study of habitus, epipharynx and aedeagus for the characterization of genera. This criterion allows either to insert more objectively a species into an old or newly described genus, or to exclude it from a polyphyletic generic taxon. Obviously the genera so redefined are more logically compared.

The present works proposes the revision of all genus-group taxa, considered at systematic rank of genus, described till the end of 1998 into the subfamily Aphodiinae. Aphodiinae have been splitted into two tribes: Aphodiini and Didactyliini with 166 and 12 genera respectively.

The paper includes: a) the introduction with a bibliographic historical outline and the list of morpho-anatomic characters of adults utilized in the modern taxonomy of Aphodiinae; b) the systematic catalogue with the geographical distribution of genera and respective type species (part I); c) the dichotomical keys to tribes and genera dealt with (part II).

Part III (Aphodiini) and part IV (Didactyliini) include the redescrptions of genera and relative type species. Some characters, not organically utilized in the past, are added to the traditional ones.

It was not possible to revise the genera *Anomalurobius* and *Arrowiellus* due to lack of type material of the respective type species, since the original diagnoses only have been reported. For the same reason the genus *Doaphius* is interpreted *sensu auctorum*.

The new synonymies and the nomenclatural acts regarding the taxa dealt with are critically discussed. The lectotypes of numerous type species are designated.

Riassunto – Saggio di revisione a livello mondiale dei taxa di gruppo-genere di Aphodiinae (Coleoptera Aphodiidae).

L'esistenza nella sottofamiglia Aphodiinae di un troppo elevato numero di taxa di gruppo-genere rende usualmente difficile la corretta attribuzione delle specie ad uno di essi. Tale difficoltà è spesso ulteriormente acuita dalla mancanza, salvo per quanto riguarda i taxa generici recentemente istituiti, di diagnosi ed iconografia adeguate.

Alcuni lavori recenti hanno dimostrato l'importanza dello studio simultaneo e comparato di habitus, edeago ed epifaringe per la caratterizzazione dei generi. Tale criterio consente di ascrivere una specie ad un dato genere, già esistente o nuovo, in maniera più oggettiva o di escluderla da un taxon generico polifiletico. E' ovvio che i generi così ridefiniti sono stati più logicamente comparati.

La presente pubblicazione propone la revisione dell'insieme dei taxa di gruppo-genere, tutti considerati al rango sistematico di genere, descritti sino alla fine del 1998 per la sottofamiglia Aphodiinae. Essa è suddivisa in due tribù: Aphodiini e Didactyliini, costituite rispettivamente da 166 e 12 generi.

Il lavoro comprende: a) l'introduzione, con un profilo storico-bibliografico e l'illustrazione delle caratteristiche morfo-anatomiche degli adulti utilizzate nella moderna tassonomia degli Aphodiinae; b) il catalogo sistematico, corredato della distribuzione geografica dei generi e delle rispettive specie tipo (parte I); c) le chiavi dicotomiche delle tribù e dei generi trattati (parte II).

* Authors' names are in order of age only

Alle ridescrizioni di ciascun genere e della rispettiva specie tipo sono dedicate la parte III (Aphodiini) e IV (Didactyliini). Nelle descrizioni, taluni caratteri, in passato non utilizzati organicamente, sono stati aggiunti a quelli tradizionali. Di ogni specie tipo sono illustrati habitus, epifaringe ed edeago.

Vista l'impossibilità di reperire materiale tipico delle specie tipo dei generi *Anomalurobius* e *Arrowiellus* non è stato possibile effettuarne la revisione tassonomica e ne sono riportate le descrizioni originali. Per lo stesso motivo del genere *Doaphius* ne è stata data l'interpretazione *sensu auctorum*.

Diversi generi considerati finora appartenenti ad altre sottofamiglie sono stati trasferiti negli Aphodiinae e, per contro, altri ne sono stati esclusi.

Le sinonimie nuove e gli altri atti nomenclatoriali inerenti ai taxa trattati sono motivati criticamente. I lectotipi di numerose specie tipo sono stati designati.

Résumé – *Essai de révision des genres d'Aphodiinae au niveau mondial (Coleoptera Aphodiidae).*

L'attribution correcte d'une espèce de la sous-famille Aphodiinae à l'un des nombreux taxons des groupes genres est devenue à ce jour difficile. Exceptés pour la plupart des genres ou sous-genres décrits récemment, cette difficulté est accrue par l'absence de diagnoses et d'illustrations adéquates.

Certains travaux récents ont démontré l'importance de l'étude morphologique simultanée des caractéristiques de habitus, de l'épipharynx et de l'édeage pour définir le genre. Ces critères permettent d'attribuer de manière plus objective une espèce à un genre, ancien ou nouveau, ou à l'inverse de l'exclure d'un taxon générique polyphylétique. Ainsi, les genres redéfinis peuvent être plus logiquement comparés.

Pour la sous-famille Aphodiinae, la présente publication propose la révision de l'ensemble des taxa des groupes-genres décrits jusqu'à la fin de l'année 1998. Ils sont traités sur un même niveau systématique, celui du genre. Cette sous famille est divisée en deux tribus : Aphodiini et Didactyliini qui comprennent respectivement 166 et 12 genres.

Le travail comprend : a) l'introduction, avec un profil historico-bibliographique et l'illustration des caractères morpho-anatomiques des adultes qui sont utilisés dans la taxonomie moderne des Aphodiinae; b) le catalogue systématique avec la distribution géographique de chaque genre et de chaque espèce-type (part I); c) les clés de détermination des tribus et des genres traités (part II). Les descriptions des genres et des espèces-types concernées sont données dans la partie III (tribu Aphodiini) et la partie IV (tribu Didactyliini). Dans ces descriptions plusieurs caractères systématiques qui n'étaient pas utilisés auparavant ont été ajoutés. Chaque espèce-type est illustrée (habitus, épipharynx et édéage).

Dans l'impossibilité de trouver le matériel typique des espèces-types des genres *Anomalurobius* et *Arrowiellus* il n'a pas été possible d'effectuer la révision taxonomique. Dans ce cas, la diagnose originale a simplement été reprise. Pour la même raison, nous avons donné l'interprétation *sensu auctorum* du genre *Doaphius*.

Plusieurs genres appartenant jusqu'à présent à d'autres sous-familles ont été transférés dans les Aphodiinae et, à l'inverse, d'autres genres en ont été exclus.

Les nouvelles synonymies et les actes de nomenclature inhérents aux taxa traités ont été discutés. Les lectotypes de plusieurs espèces-types ont été désignés.

Key words: Aphodiidae, taxonomy, new combinations, new state, new synonymies, lectotype designations, genus names catalogue.

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INTRODUCTION

A preliminary explanation of the title of this work is necessary. The term "essay" is used because not all described Aphodiinae species-group taxa are known by us, therefore it is not certain that all taxonomical characters utilized for generic diagnoses are actually of generic value: some may be useful only for species characterization.

For example, *prodromus*, the type species of *Melinopterus*, possesses a bordered pronotal base, a character that has been accepted by specialists in Aphodiidae as being a valid generic character. However, the species *guillebeau* and *pubescens* undoubtedly belong in *Melinopterus* but lack a basally bordered pronotum. Another example is *Ammoecius*, a genus grouping species with the clypeus denticulate or rounded at the sides of the median sinuosity, and species with the anterior pronotal margin bordered or not. These are characters often used for separating genera. Last but not least, we cite the genus *Aganocrossus*; it contains species with lateral pronotal margins ciliate or glabrous, which is also a character utilized at the genus-group level. Consequently it is obvious that many characters now considered of value at the generic level must be reduced to species level use.

We are also aware that when dealing with monospecific or polyspecific genus-group taxa of which the type species is known only from one specimen (e. g.: *Erytodes*, *Mozartius*, *Symphodon*, etc.), especially if it is a female, there can be no guarantee that the diagnoses are either complete or correct. Anyway descriptions should be as complete as possible.

These are the reasons why this study is proposed as an "essay" only.

A historical review of pertinent publications shows that genera and subgenera of Aphodiinae have been reduced or elevated in rank with each subsequent author. The basis for this instability is usually due to a lack of selection of characters that would allow the proper assignment of a species to a particular genus-group taxon.

Difficulties in treating a taxonomic group increase with the increasing number of species assigned to it. This is why most recent authors of large revisional works on Aphodiidae adopted arbitrary criteria for grouping species based primarily on the desire to simplify the use of dichotomical keys. Nevertheless, systematics of some subfamilies of Aphodiidae has reached an acceptable level of classification.

For instance, thanks to studies by Rakovič (1979, 1981 and 1986), Pittino & Mariani (1986) and Gordon & Pittino (1992), just to mention the most important works for the subfamily Psammodiinae, the genera *Psammodius* and *Diastictus* have been split into taxa of equal rank. The large genus *Rhyssenus* still awaits a similar treatment.

In recent years, the subfamily Eupariinae was partially revised by Chalumeau (1981, 1983 and 1992) but he gave only an outline of a subdivision of the genera *Euparia* and *Ataenius*. *Ataenius* includes more than three hundred species and is in serious need of revisional work.

Specimens of the subfamily Corythoderinae are primarily myrmecophilous or termitophilous, therefore relatively few specimens are available for study. This subfamily was revised by Tangelder & Krikken (1982) in a work wherein the genera *Corythoderus* and *Chaetopisthes* were divided into several subgenera.

Depending upon the extent of descriptions of genera and subgenera of Aphodiinae, it becomes more difficult for the descriptor to insert a new species into a given genus or subgenus unless it closely resembles the type species of one of them. It is often a problem for the specialist to identify an Aphodiinae taxon because it is impossible to check at least one character agreeing with any of those used by authors in establishing genera or subgenera.

At present the problem is far from a solution. It is sometimes discovered, in studying type material, that the same species was described under different names and ascribed to different genus-group taxa even by the original descriptor. Obviously identification difficulties will increase more and more because new species are most likely to be assigned to genus-group taxa whose diagnoses are still based on obsolete taxonomic characters. An improvement of the taxonomic structure of the different genus-group taxa of Aphodiinae involves a world level revision based upon morpho-anatomical studies of the pertinent type species.

This paper emphasizes the importance of epipharyngeal and aedeagal structures through a detailed study of the comparative morphology. Within certain limits some characteristics are shown to be shared by many groups, supporting a new arrangement of species involved.

In the light of previous comments, it is apparent that the present practice of extensive usage of subgenera cannot be maintained. All genus-group taxa of Aphodiinae are therefore considered to be of the same rank, i. e.: genus rank. We will clarify this approach later in this paper.

Our diagnoses of genera are supported by habitus characters whose importance was either unknown to previous authors or ignored by them, e. g.: first elytral stria widened or not toward apex; pubescence of pygidium; size of eyes; clypeal margin and genae bristled or not; etc.

For other characters some clarifications are in order, e.g.: apical spinules of hind tibiae short and of equal length or elongate and progressively, alternately or irregularly unequal; shape of scutellum apically obtusely rounded or acuminate, or triangular (equilateral or isosceles) with straight or curved sides, or pentagonal (with parallel or converging sides toward the base), or amygdaliform or cordiform.

The integrated use of these discriminating characters results in an approach to the definition of genera which seems to us more objective.

* * * * *

It is evident that genus-group taxa so redefined cannot include all species actually ascribed to them in previous works such as those of one of us (M. Dellacasa, 1988a, 1988b, 1988c, 1991 and 1995). New combinations will be necessary for many species and new genera will have to be recognized for species that, on the basis of new diagnostic characters, will be automatically excluded from all old genera.

Therefore this essay should be considered only as a working tool for a systematic reclassification of Aphodiinae species rather than as a definitive synthesis, if indeed anything strictly definitive can be created in this field of research.

GENERA OR SUBGENERA?

Systematics is a science attempting to define the hierarchical relationships among organisms. Thus it is necessary to establish meaning and value of the different categories recognized.

The basic category of systematics, as universally admitted, is the species. Species being labelled by means of Linnaean binominal nomenclature, the genus too becomes a fundamental rank in systematics.

A clear definition of the species concept is far to be achieved in spite of the vast body of concerning literature. The scientific opinions about the genus concept are often more at odds and only partially approximate one another. Generally it might be admitted that species is an objective entity whereas genus is likely to be a subjective entity.

The flexibility of systematic limits of a given genus varies according to the interpretation of authors. Each can explain his own ideas by arbitrarily including or excluding one or more species which will obviously modify the generic diagnosis. However they cannot change the type species¹ which, with its peculiar characteristics, remains the only basic reference point from which to define generic limits.

In general, it may be stated that the systematic limits of a genus are subjectively established but that they must be based upon objective characters shared by the species

¹ Concerning the selection of type species for synonymized genera see ICZN, Art. 67.12.

assigned to the genus; these characters differentiate them from species included in other generic taxa².

Mayr, Linsley & Usinger's (1953) proposal: "[a] taxonomic category containing a single species or group of species which is separated from other taxa of the same rank by a decided gap", can be accepted as a definition of genus.

However, "decided" is an indeterminate expression that does not establish within which character ranges two species are separable at the generic level.

Excluding phylogenetic, biogeographic, etc., aspects and restricting the range of inquiry to the purely systematic problem, one must assume that genera, within the limits established by their diagnoses, are philosophical constructions of various specialists, and that they are extremely practical working tools though not being objective natural entities.

Anyway, from a strictly systematic point of view, establishing the philosophical basis of the genus concept and the related value attributable to it in the hierarchic scale of systematic categories is irrelevant. The use of other infrageneric categories (subgenera, Artenkreise, Artengruppen, etc.) seems to be even more unjustified because of the higher level of difficulty and arbitrariness in definition (La Greca, 1987; Minelli, 1993).

The subgenus, particularly, seems to be a useless systematic category (no objective criteria exist to establish its hierarchic inferiority versus the genus) or, at least, a risky category because of nomenclatural implications when dealing with, as in the present context, a tribe (Aphodiini) that presently includes about forty genera, one of which (*Aphodius*) is divided into more than one hundred and thirty subgenera with more than two thousand species-group taxa.

Moreover, when authors face the problem of assigning genus rank to genus-group taxa, they are obliged to take an unambiguous opinion both in case of the proposal of a new taxon and for a new synonymy. Effectively authors, in these cases, cannot resort to subgenus rank even if that appears a less engaging and less compromising choice should their conclusions not be accepted by other specialists.

NOMENCLATURAL IMPLICATIONS

Due to the international rules presently in effect, the nomenclatural impact of raising to generic level all genus-group taxa in the subfamily Aphodiinae must take into account the following points:

1) the use of parentheses in author's name and publication year citation [ICZN, art. 51.3]:

a) combination of a specific name with a name of a genus subsequently downgraded to subgeneric rank and subsequently rehabilitated. In this case, parentheses

² Nevertheless, it is important to remark also the distinction between polythetic and monothetic groups. Polythetic is a group whose all entities share the most of characters but no character is shared by all entities pertaining to the group. Monothetic is a group whose all entities share a complex of characters representing the necessary and sufficient condition for pertaining to the group.

have to be eliminated because the original combination is restored;

b) combination of a specific name with a name of a genus with, in between, a name of a subgenus subsequently raised to genus rank. In this case, parentheses have to be inserted due to the change of original combination.

2) The secondary homonymy involving two cases:

a) if an available synonym has been adopted as the valid name for the junior secondary homonym [ICZN, art. 60.2], so this has not been replaced, and the two taxa in question are no longer congeneric, the original name must be restored [ICZN, art. 59.2].

For example, for *Aphodius oblongus* Say, 1823 (nunc *Aphodius* (*Stenotothorax*) *oblongus* Say, 1823) resulting junior secondary homonym of *Scarabaeus oblongus* Scopoli, 1763 [nunc *Aphodius* (*Acrossus*) *oblongus* (Scopoli, 1763), junior synonym of *Scarabaeus rufipes* Linné, 1758, nunc *Aphodius* (*Acrossus*) *rufipes* (Linné, 1758)], its oldest available synonym *Aphodius badipes* Melsheimer, 1844 was adopted as the valid name. The reevaluation at generic rank of *Acrossus* Mulsant, 1842 and *Stenotothorax* A. Schmidt, 1913, till now considered subgenera of *Aphodius* Illiger, 1798, eliminates the secondary homonymy, thus the name *oblongus* Say, 1823 must be restored as the valid name of the taxon.

b) If for the junior secondary homonym, a new replacement name was created, the date of the nomenclatural act must be considered:

I) should the new name has been proposed after 1960, it becomes an unnecessary name and the original name must be restored [ICZN, art. 59.4], e.g.: *Paradidactylia montana* Clément, 1958 (*nomen conservandum*) = *Aphodius* (*Paradidactylia*) *montanus* (Clément, 1958) apud Endrödi, 1964, nec *Aphodius* (*Neagolius*) *montanus* Erichson, 1848 = *Aphodius* (*Paradidactylia*) *pierreclementi* M. Dellacasa, 1988 (*nomen novum innecessum*);

II) should the new name has been proposed before 1961, it has to be taken as the valid name anyway [ICZN, art. 59.3], e.g.: *Paradidactylia atra* Balthasar, 1937 = *Aphodius* (*Paradidactylia*) *ater* (Balthasar, 1937) apud Endrödi, 1960, nec *Aphodius* (*Agrilinus*) *ater* (DeGeer, 1774) = *Aphodius* (*Paradidactylia*) *venaloides* Endrödi, 1960 (*nomen novum conservandum*), i.e.: *Paradidactylia venaloides* (Endrödi, 1960).

* * * * *

As obvious as it might look, it is advisable to mention that among species-group names, one that is junior primary homonym is permanently invalid [ICZN, art. 57.2].

The nomenclatural provisions of this article are so clearly formulated that no interpretation problem should arise. Anyway, the Commission with her plenary powers can rule for their unapplication to the particular cases proposed for a decision.

It happened in the case recently settled (Opinion 1890. BZN 55 (1998): 54-57) concerning three primary homonyms (*Scarabaeus rufus* DeGeer, 1778, *Scarabaeus rufus* Moll, 1782 and *Scarabaeus rufus* Fabricius, 1792) no more congeneric (*Dischista rufa*, *Aphodius rufus* and *Rhysothorax rufus*), whose names have to be conserved and

are placed on the Official List of Specific Names in Zoology in spite of the alternative solutions proposed (... *potere legem, quam ipse tulisti!*).

Because the unconditioned favour for conserving the "names in use", the jurisprudence, once again, prevails to the law and, unfortunately, the application of the rules in force becomes uncertain (... *tunc ius calcatur, doctrina cum dominatur!*).

BIBLIOGRAPHIC HISTORICAL OUTLINE

PAPERS BY EUROPEAN AUTHORS. The genus *Aphodius* was created by Illiger (1798) for thirty two species removed from the genus *Copris* sensu Olivier (1789).

Cuvier, in the same year (1798), proposed the new genus *Platycephalus*, adopting a Brongniart's name *in litteris*, for two species (*fimetarius* and *conspurcatus*) moved from *Copris* Geoffroy, 1762 because they have an apparent scutellum³.

Latreille (1810: 428) designated *Scarabaeus fimetarius* Linné, 1758 as type species of the genus *Aphodius* Illiger, 1798. As a matter of fact, Latreille inaugurated a new era in the systematic studies giving a synopsis of insects genera and respective type species in several works published over a period of years (1796-1829). As synthesized by Crotch (1870a: 41), genus, in Latreille's concept, "appears to consist of but one species necessarily - viz. its type - round which arbitrarily is grouped one number of others, which may be removed at pleasure. Genus is therefore defined not so much by characters, which vary with knowledge, but by selection of a type species".

Disregarding the works of Fallén (1807b) and Latreille (1807), who created the genera *Psammodius* and *Aegialia* for some of Illiger's species, the first subdivisional essay of the genus *Aphodius* seems to be that of Ahrens (1812) who proposed six "Familien" (*coproides*, *convexi*, *oblongi*, *depressi*, *cylindrici* and *troxoides*).

Stephens (1830) did not follow the subdivisions of Ahrens but, first, separated the species belonging to the genus *Aphodius* into two groups based on the different size of scutellum.

In his Catalogue (1833), Dejean proposed the generic name *Oxyomus* adopting a Eschscholtz's *nomen in litteris* and listed several species pertaining to it among which *porcatus* (Fabricius, 1775) [junior synonym of *sylvestris* (Scopoli, 1763)]⁴.

In 1840 Walter Schmidt, basing his study upon better defined characters than those by Ahrens, split *Aphodius* into four "Gruppen" (*plani*, *genuini*, *depressi*, *globosi*).

However the work that may be considered fundamental was that of Mulsant (1842), who subdivided his family "Aphodiens" into two "branches" (Aphodiales and Psammodiales). The first included three "rameaux" (Aphodiales, Ammoeciales and Pleurophorates); the first "rameau" included ten genera. Besides the large genus *Aphodius*, nine new genera were described: *Acrossus*, *Colobopterus*, *Coprimorphus*,

³ *Platycephalus* Cuvier, 1798 is not a valid name because it is homonym (*teste* Neave, 1939) of *Platycephalus* Block, 1795 (Pisces). We **herein designate** *Scarabaeus fimetarius* Linné, 1758 as **type species** of *Platycephalus* Cuvier, thus it falls within the synonymy of *Aphodius* Illiger, 1798 as interpreted by the present systematic limits of latter genus.

⁴ The authorship of *Oxyomus* has to be attributed to Dejean (1833) in force of nomenclatural provisions of the Code for this case [art. 12.2.5]

Eupleurus, *Heptaulacus*, *Melinopterus*, *Otophorus*, *Teuchestes* and *Trichonotus*. The second "rameau" included the new genus *Ammoecius* only. The third "rameau" included three new genera in addition to *Oxyomus*: *Plagiogonus*, *Pleurophorus* and *Rhyssemus*, of which only *Oxyomus* and *Plagiogonus* belong to the tribe Aphodiini as interpreted by its present systematic limits.

Erichson (1847b; 1848), in his "Gruppe" Aphodiidae, subdivided genus *Aphodius* in several sections distinguished by alphabetical letters (A, B, C, etc.) but maintained *Ammoecius* and *Oxyomus* as separate genera. Each of these sections was defined by a short diagnosis followed by descriptions of pertinent species.

Unlike Mulsant, who created dichotomical keys for his genus-group taxa, Erichson did not do so, thus rendering impractical the use of his work. Quite often he quoted or described in foot notes "exotic" taxa if, in his opinion, they fit into one of his "sections"; this inconvenience complicates the use of his system.

Boheman (1857) listed the species of "Aphodiidae" collected by J. A. Wahlberg in Southern Africa, adopting Erichson's systematic system (quoting, in parenthesis, between generic and specific names, the alphabetical letter identifying the pertinent section), but he too maintained *Ammoecius* as a valid genus. His work settled the Afrotropical species of *Aphodius* in a more or less satisfactory arrangement within Erichson's system.

Motschulsky (1859a), on the contrary, followed Mulsant's system and, rather confusedly, worked up a dichotomical key to "genres" of Aphodiini describing several new taxa especially from the Oriental region.

C. G. Thomson (1863), dealing with systematics of his "familia" Aphodiidae, directed particular attention to several morphological characters: a) whether the first segment of protarsi is of equal length of the second or longer or shorter than it; b) whether the first segment of metatarsi is of equal length of the following variously combined or longer or shorter than them; c) whether the superior apical spur of metatibiae is of equal length of the first tarsal segment or longer or shorter than it; d) whether the outer margin of protibiae is proximally smooth or serrulate. Moreover, the Swedish author attached great importance to secondary sexual characters and specified them for each taxon (for *Aphodius porcus*, e. g., he wrote (1863: 57): "*Mas: tuberculis frontalibus obsoletis; prothorace nitidulo. Femina: tuberculo frontali intermedio fortiore; prothorace subopaco*").

Between 1859 and 1874, Harold published a series of works dealing with more than three hundred *Aphodius* species known at that time, and described many new taxa. He classified the taxa following Erichson's system but, occasionally, he revamped Mulsant's genera; moreover he critically compared the supraspecific divisions of previous authors but did not follow any of them because their arrangements prevented him from reasonably settling all known or new species at a world-wide level.

Summarizing, Harold considered valid only a few of the existing genus-group taxa including all species not fitting into the large genus *Aphodius*. This becomes more evident in his Catalogue (1869c) where nearly all of Mulsant's and Motschulsky's genera are synonymized with *Aphodius* except *Ammoecius*, *Plagiogonus* and *Oxyomus*. Furthermore the Catalogue lists all specific taxa of Aphodiinae, known at world level,

grouped in ten genera of the large family Scarabaeidae (Coprini): *Ammoecius*, *Aphodius*, *Coptochirus*, *Dialytes*, *Harmogaster*, *Mendidius*, *Oxyomus*, *Plagiogonus*, *Proctophanes* and *Sybax*.

For the "Aphodiates" of their family "Aphodiens", Mulsant & Rey (1870b) proposed more or less the same hierarchy of Mulsant's (1842) work but added two new "rameaux" within the "Aphodiaires" (Heptaulacates and Hexalates) and separated "Pleurophorates" from "Aphodiaires" for which they created a new selfstanding "branche": "Pleurophoraires".

The "rameau" "Aphodiaires", more or less corresponding to the large genus *Aphodius* of their contemporary authors, was subdivided into two "groupes" based on scutellum size. The group of species "à grand écusson" maintained nearly all genera described by Mulsant in 1842 except for *Eupleurus* which became a synonym ("groupe"?) of *Coprimorphus*. On the contrary Mulsant & Rey did not confirm any more the genus rank for the subdivisions of the species "à petit écusson" but included all of them in the genus *Aphodius*, which was split into "divisions", each including several "sous genres", further subdivided into "sections" including several "fractions", each of them with a dichotomical key to one or more groups of species. "Sous genres", "fractions" and sometimes the groups of species also, were identified often proposing new Latin names.

Mulsant & Rey, rather than supplying a dichotomical key to all *Aphodius* genus-group taxa and, subordinately, for each group, a key to the species respectively ascribed, interrupted the supraspecific dichotomy after showing the characteristics of each group, the key and descriptions of species followed immediately. By consequence the work of Mulsant & Rey is as impractical as Erichson's work.

Surprisingly enough, in the "Tableau des Lamellicornes de France" (Mulsant & Rey, 1871: 473) most of these "groupements" were listed as subgenera.

Reitter (1892) divided the tribe Aphodiini into two subtribes (Aphodiina and Psammodiina) only on the basis of the presence or absence of oblique transverse carinae on the outer face of the hind tibiae. In Aphodiina, he maintained as valid only six genera (*Ahermes*, *Aphodius*, *Heptaulacus*, *Isochirus*, *Oxycorythus* and *Oxyomus*) but except for *Heptaulacus* and *Oxyomus* he accepted all genus-group taxa described by Mulsant, Motschulsky and Mulsant & Rey as subgenera of *Aphodius* without supplying any explanation for such an arrangement.

Reitter was the first author to designate type species for each subgenus of *Aphodius* - but not for other genera of Aphodiina - but, unfortunately, without taking into account the monotypy of some of them when originally described.

Four years later, H. d'Orbigny (1896a) followed Reitter's classification almost entirely for the Mediterranean Basin *Aphodius*.

For Portuguese "Scarabaeidos", A. F. de Seabra (1909) divided the genus *Aphodius* in three "secções" mainly distinguished by the shape of "epistoma" (*nunc* clypeus) and hierarchically placed between genus and subgenus. Each "secção" was subdivided in subgenera: section *Digonorhinus* included subgenus *Ammoecius* only, section *Cytoderhinus* included nine subgenera (*Amidorus*, *Aphodius* s. str., *Biralus*, *Bodilus*, *Calamosternus*, *Colobopterus*, *Melinopterus*, *Teuchestes*, *Volinus*) and section

Hemicyclorhinus included subgenus *Acrossus* only. None of subsequent authors supported this arrangement, and Seabra's "secções" are herein considered synonyms respectively of the genera *Ammoecius*, *Aphodius* and *Acrossus*⁵.

Adolf Schmidt (1910b) subdivided the family Aphodiidae in five "Gruppen" (Aphodiina, Eupariina, Psammodiina, Rhyparina and Corythoderina). At this stage, due to authors previously mentioned and to Péringuey (1901) (for the Southern Africa fauna), Aphodiina included nineteen genera and *Aphodius* thirty six subgenera.

Bedel, in his many synonymical notes and in "Faune des Coléoptères du Bassin de la Seine. Vol. 4 (I). Scarabaeidae" (1911a), rehabilitated some of Motschulsky's names older than those of Mulsant & Rey, e.g.: *Chilo thorax*, *Lio thorax*, *Phalacrothorus*.

In 1913, Adolf Schmidt published his essay on the world classification of *Aphodius* species grouped in subgenera. To those defined in his 1910 work, he added twenty eight new subgenera which were defined with very short diagnoses and without designation of type species. It should be noted that some of Schmidt's subgenera, essentially characterized by a single morphological character (e.g.: *Pharaphodius*, *Trichaphodius*, *Volinus*, etc.), to which several species-group taxa were assigned, appear to be highly paraphyletic.

Adolf Schmidt himself (1922), in his fundamental monograph on world Aphodiinae, completed the previous diagnoses with more accurate descriptions of all genus-group taxa but, in this case also, without designating or indicating the type species. Importantly enough, Schmidt gives a few schematic figures of mouthparts including the epipharynx. This is probably the first mention of the epipharynx as a discriminating morphological character at the genus-group level within the Aphodiinae.

The large subdivisions that Clément (*in verbis*) was defining by an unflattering but appropriate term "genres poubelles" were taking form.

Paulian (1942) in his work on Aphodiinae from Albert National Park, reevaluated all *Aphodius* subgenera of the Afrotropical region up to the rank of genera, thus putting all genus-group taxa of his Aphodiina at the same comparable level. He justified this choice by saying that the comparative study of epipharynx, aedeagus and habitus leads to the conclusion that *Aphodius* subgenera must be upgraded to genus rank.

This work is peculiar in that the type species of each genus dealt with is therein designated. In each case, Paulian choose as type species the first one listed by Adolf Schmidt in his 1913 work, but apparently he did not always see specimens of the species involved.

As a matter of fact, Adolf Schmidt's lists often reflect the order of his dichotomical keys for each genus-group taxon. Therefore the species listed first is the least typical one (e.g. *Aphodius furcatus* in subgenus *Blackburneus*) owing to its peculiar discriminant characters. Following Paulian's action, the characters of several Afrotropical or Nearctic subgenera *sensu* Schmidt are often distorted because they do not quite fit the type species discriminating characters.

⁵ We **herein designate** *Scarabaeus fimetarius* Linné, 1758; *Scarabaeus luridus* Fabricius, 1775 and *Scarabaeus elevatus* Olivier, 1779 **type species** respectively of *Cytoderhinus*, *Hemicyclorhinus* and *Digonorhinus*, thus they fall within the synonymy respectively of the genera *Aphodius* Illiger, 1798, *Acrossus* Mulsant, 1842 and *Ammoecius* Mulsant, 1842 as interpreted by present systematic limits.

Paulian's new proposal of Aphodiinae classification had quite few supporters and was not unanimously accepted by present day specialists. Endrödi (1955), for instance, first supported Paulian's views but after 1956 he adopted Balthasar's views (1942, 1945a) stating that the reevaluation of *Aphodius* subgenera, of which he considered the assigned species "très uniformes", was not justified because most subgenera were of doubtful validity. However neither Endrödi nor Balthasar showed particular interest in the morphological study of aedeagus and epipharynx and these two anatomical structures were rarely used by subsequent authors.

Endrödi (1960b) discussed various aspects of *Aphodius* systematics and, as a result, split the genus into two subgenera: *Colobopterus* and *Aphodius* s.str. All other subgeneric taxa were undervalued as "Artengruppen". To justify his opinion, Endrödi alleged that he was not at all favourable to the splitting of the genera. He more or less rightly argued that a simple morphological character could not be used to define a genus if it was evaluated as of primary importance by some authors and as of secondary importance by others.

Eventually Endrödi's "Artengruppen" include species that shared only habitus characters so that they could be referred to any of several of Erichson's groups. In 1964, Endrödi raised *Colobopterus* to genus rank due to the size of the scutellum and included in this genus several "Artengruppen" as he did for *Aphodius*. He also admitted that the systematic value of some of them, which evidently included heterogeneous species, was questionable and consequently they should be considered only as groups of convenience.

With his monograph of Italian Aphodiini, one of us (G. Dellacasa, 1983) reevaluated Mulsant's (1842), Motschulsky's (1859) and Mulsant & Rey's (1870b) subgenera. He established rather strict taxonomical limits for each of them and supplied habitus and morphological descriptions for each type species. The study of these characters showed that a few species should be moved from one subgenus to another in order to establish more homogeneous groups.

Pittino (1984), in a study of the Saudi Arabian fauna, split Aphodiidae into four tribes (Aegialiini, Aphodiini, Psammodiini and Eupariini). He further split Aphodiini into two subtribes, Aphodiina and Didactyliina; the latter described as new. He defined Didactyliina by the near absence of transversal oblique carinae on the outer face of the metatibiae and by the different insertion of the apical spurs. In Aphodiina, the metabasitarsomere emerges between the spurs; in Didactyliina, it does not.

PAPERS BY AMERICAN AUTHORS. At the time European authors developed attempts to reach a satisfactory classification of Aphodiinae, American authors adopted Horn's system almost exclusively.

Though the first treatment of the North American *Aphodius* fauna was by LeConte (1861), the first revision of United States Aphodiinae was by Horn (1887) who followed Erichson's classification, with subdivisions alphabetically arranged, as well as adopting some of Mulsant's genus-group taxa. Horn wrote that his "series" had "purely speculative" value but was conscious of having obtained a satisfactory, though artificial, arrangement.

The genus *Aphodius* at that time included eighty two species in United States. Horn divided them into four subgenera: three (*Colobopterus*, *Diapterna* and *Teuchestes*) included species with large scutellum and one (*Aphodius* s.str.) included those with small scutellum.

In his division of *Aphodius* s. str., Horn followed exclusively Erichson's system which he adapted to United States species. He named his subdivisions "groups", matching them with Erichson's alphabetical sequence A to M (J excluded), further dividing "group I" into four "series" from I-a to I-d. Moreover, in his taxonomy, Horn directed particular attention to one morphological character not used before, i.e.: upper face of protibiae smooth or punctured, considering it of great systematic value.

Adolf Schmidt (1913, 1922), dealing with Aphodiinae on a world basis, assigned to genera and subgenera most of the known American taxa but his subgeneric concepts were not universally accepted by American specialists.

As a matter of fact, the works on New World *Aphodius* produced by American authors after Horn's paper [except the work of Bates (1887, 1889) on Central American fauna], maintained Horn's classification system, though some authors mentioned the subgenera to which the new species might be assigned.

For example, H. C. Fall described several new species over a period of years (1895-1932) but did not use subgenera nor did he synthesized any part of the large genus *Aphodius*. W. J. Brown (1929a, 1929b) was the first significant American author to utilize subgenera and to revise the American species of some of them. Saylor (1940) also contributed an important revision of the "*cadaverinus*" group but did not consider that the taxa dealt with might pertain to subgenus *Stenotothorax* A. Schmidt, 1913. Only Hatch (1971) adopted Adolf Schmidt's classification, treating the Pacific northwest *Aphodius* species as assignable to several subgenera. More recently, Woodruff (1973) and Ratcliffe (1991), in their works on Florida and Nebraska Scarabaeidae respectively, assigned to the genus *Aphodius sensu lato* all species dealt with by them.

Horn's system was generally adopted in the Western Hemisphere since most American authors insisted on the need for a world revision of genera and subgenera of Aphodiinae before arranging species in genus-group taxa. A series of negative appraisals of Schmidt's approach (emphasized by Gordon, 1973) maintained, as universally admitted by specialists, that too many genera and subgenera are invalid and many should be divided or their definitions modified.

RECENT PAPERS. In recent revisional works on Aphodiinae, authors' justifications about the rank chosen (genus or subgenus) for the various genus-group taxa are not clearly explained, and it remains a matter of subjective and somewhat questionable choice. Stebnicka & Howden (1995), e. g., used both, raising to genus rank the subgenera including exclusively Australian species and considering other genus-group taxa only as "groups" of species.

Only Ádám (1994) published a check-list of Hungarian Scarabaeidae in which all *Aphodius* subgenera were reevaluated to genus rank without giving any explanation for the new arrangement.

One of us (M. Dellacasa) in a more recent review (1991) on genera and subgenera

of Aphodiinae, listed thirty nine genera and one hundred and thirty five subgenera for the genus *Aphodius*. Some of the subgenera included numerous species with a maximum in *Pharaphodius* with one hundred and three species, some of which lack the original subgeneric character of elytral striae not joined before the elytral apex.

* * * * *

The work of Hollande & Théron (1999) is the last one taken in consideration in the present paper as to taxonomy and nomenclature of Aphodiinae.

ADULT MORPHO-ANATOMICAL CHARACTERS ADOPTED IN APHODIINAE TAXONOMY

A sound understanding of a descriptive paper requires a thorough familiarization with pertinent terminology. The following review, supported by iconographical coverage, deals with structures having a bearing on modern Aphodiinae taxonomy.

1. UPPER SIDE OF HEAD

Several, more or less distinct, areolae and structures, bear characters of particular importance at specific and supraspecific levels.

- a) clypeus (fig. 2: Cly) [an areola anteriorly distal to head merging with epistome and laterally extended to genal sutures] either bordered or not (the border may be upturned or not, thin or thick and more or less diffusely and elongately bristled or glabrous); either rounded, truncate, or more or less distinctly sinuate at middle, and rounded, angulate or denticulate at sides of median sinuosity;
- b) epistome (fig. 2: Ep) [an areola placed at centre of head behind clypeus, laterally defined by genal sutures and proximally by frontal suture] either glabrous or pubescent; flat or gibbous; microreticulate or not; smooth, punctured, rugose or granulose; occasionally with a more or less arcuate transverse carina (fig. 2: Ec); seldom with a longitudinal feeble carina, either with lateral oblique grooves or horn-shaped central process;
- c) genae (fig. 2: Ge) [lateral areolae separated internally from epistome by the genal sutures (fig. 2: Gs) and surrounding the fore margin of eyes] they may be rounded, obtusely or acutely angulate, aligned to clypeal margin or auriculate; with or without bristles; more protruding than eyes or not;
- d) frontal suture (fig. 2: Sf) [placed transversely between eyes] may be impressed or cariniform; tuberculate or not, seldom obsolete. When tuberculate there might be two lateral tubercles, usually weak and transverse, and a central one more raised and sometime horn-shaped, rarely bifid at tip;
- e) front (fig. 2: Fr) [a transverse areola, sometimes named vertex, placed between inner margins of eyes, anteriorly limited by frontal suture, indistinctly joined laterally with temples and surrounded posteriorly by the occiput] it may be smooth, punctured, rugose or granulose; glabrous or pubescent; rarely with a median impression and quite rarely with a central tubercle.

2. EYES

The size of eyes (fig. 2: Ey) (subreniform and usually convex) is sometimes of supraspecific dichotomical importance.

3. ANTENNAE

The antennae (fig. 5), (flagellate, bearing nine antennomeres) are inserted inferiorly at sides of head, anteriorly to subgenae. More than their morphology [one can distinguish scape (fig. 5: Sc), pedicelle (fig. 5: Pe), funicle (fig. 5: Fu) and club (fig. 5: Cl)] their colour, mainly that of the club, is diagnostically useful.

4. PRONOTUM

Among characters of the various structures of prothorax, only those of the pronotum are used.

The pronotum is a wide dorsal sclerite, either glabrous or pubescent, smooth or punctured, sometimes with median impression at its front margin (fig. 2: Mi) or with a median-anterior horn-shaped tubercle directed frontward or with feeble, variously arranged, longitudinal median or oblique lateral grooves and foveolae.

Pronotal features can be so listed:

- a) anterior margin (fig. 2: Am), which may be bordered or not, sometimes more or less broadly membranous;
- b) anterior angles (fig. 2: Aa), usually evident and protruding frontward;
- c) lateral margins (fig. 2: Lb), rounded or straight; subparallel or frontwardly convergent; more or less distinctly sinuate before hind angles; bordered or not (the border more or less diffusedly and elongately bristled or quite glabrous). It is important enough to remark that the elongate hairs infuscate on propleuron (fig. 1: Pl) may jut outwardly so that lateral margins, seen from above, appear sometimes more or less distinctly ciliate especially toward front angles (e. g. in *Amidorus* and *Aphodiellus*);
- d) posterior angles (fig. 2: Ha) may be rounded, obtuse or truncate (sometimes truncation inwardly sinuate), rarely acute or subdenticulate and rarely lobate;
- e) basal margin (fig. 2: Pb), bristled or glabrous; rarely straight, often regularly or bisinuate arcuate; entirely bordered or with border more or less widely interrupted at middle or completely lacking, seldom crenulate;
- f) sides (fig. 2: Si), paired distal-lateral areae sometimes with anterior and/or posterior impressions, seldom widely flattened;
- g) disc (fig. 2: Pd), a wide median circular area.

5. SCUTELLUM

It is the only part of the mesothorax to be dorsally visible (fig. 2: Sc). It is a strongly sclerotized sclerite whose size, shape and characteristics are highly diversified and, normally, typical of supraspecific groups. The scutellum may be small (i.e.: mostly as long as one sixth of sutural margin of elytra or shorter), or large (i.e.: at least as long

as one fifth of sutural margin of elytra or longer); acute or rounded apically; punctured or smooth; glabrous or pubescent; convex or concave; longitudinally grooved or carinate; triangular (equilateral or isosceles), with curved or straight sides, pentagonal (with sides parallel or converging toward base), amygdaliform or cordiform (figs 7-14).

6. ELYTRA

Heavy sclerotized, they cover, at rest, the second pair of wings, mesotergum, metatergum and urotergites. In species with perfectly functional hind wings (most of Aphodiinae), elytra, at rest, are temporarily coaptate one to another whereas they are permanently coarctate in brachipterous, micropterous or totally wingless species (G. Fiori, 1974).

In each elytron one may distinguish:

- a) base (fig. 2: Eb), aligned to the proximal margin of pronotum;
- b) shoulder (fig. 2: Hu), quite evident in fully winged species; usually feebly convex, with or without a humeral carina as an expansion of epipleuron; occasionally subdenticulate or denticulate;
- c) lateral margin (fig. 2: Lm) bristled or not;
- d) epipleuron (fig. 1: Ep), derived from a bend of the lateral margin and usually separated from the elytron by an epipleural fold;
- e) suture (fig. 2: Sm), inner margin of elytron;
- f) striae (fig. 2: St), usually ten, more or less deeply impressed on elytral surface, extended to elytral apex or feebly shortened, each ending independently from one another or variously joining apically. They may be simply punctured or crenulate, quite seldom impunctate; sometimes the first one may be apically wider than juxtasutural interstice;
- g) interstices (fig. 2: In), areae between one stria and the next. They may be smooth or punctured; seldom roughly tuberculate; flat, convex or costiform; shiny or dull; glabrous or more or less diffusely pubescent; usually larger than striae. The first is generally named the juxtasutural interstice (fig. 2: Ji);
- h) apex (fig. 2: Ea), distal margin of elytron, seldom truncate, bearing at the sutural end an apical angle which may be smoothed out, acute or, though rarely, denticulate;
- i) disc (fig. 2: Ed), medio-dorsal area of elytra;
- j) preapical declivity (fig. 2: Pad), areola more or less abruptly sloped down to elytral apex. It may be regularly convex, callose or with a more or less distinct impression.

7. WINGS

Wings usually are fully developed and functional in both sexes. Brachypterous (fig. 4), micropterous or apterous species are infrequent; sometimes such a situations appear in one sex only with prevalence in females. In Aphodiinae hind wing transverse venations are lacking, whereas cubitus (fig. 3: Cu) is highly developed. Wings, at rest, are folded in four sectors (fig. 3: dotted lines).

8. LEGS

Legs usually short and stout, are of paramount importance at suprageneric and/or supraspecific rank. Sometimes their shape is significant for sex identification.

Leg features can be so listed:

- a) femur (fig. 1: Af, Mf, Pf), broad and rather short, may be variously punctured and more or less pubescent on ventral face; rarely with obvious apophyses;
- b) tibia, usually more slender than femur. Protibia generally has the outer margin distally tridentate (fig. 2: 1t, 2t, 3t) and proximally serrulate (fig. 2: Pt); usually is provided with an apical spur (fig. 2: As); inferiorly shows a longitudinal carina (fig. 1: Ic) with or without a series of various size denticles; its upper face may be smooth or more or less coarsely and densely punctured. Mesotibia, relatively shorter and widened toward apex, usually it bears on the outer face two transverse setigerous carinae and apically a fringe of spinules either short and equal or elongate and unequal; apex is generally provided with two spurs: an upper, relatively larger and more elongate one and an inferior smaller and shorter one which is occasionally truncate or hooked at tip, seldom spatulate or exceptionally absent; the lower apical margin (fig. 1: Iam) seldom extends into a more or less widened lobe. Metatibia is relatively more elongate though at most quite widened apically; it usually bears on the outer face two more or less evident oblique transverse setigerous carinae (fig. 2: Tc), and an apical fringe of spinules (fig. 1: Asp) which may be thin and elongate, irregularly, alternately or progressively unequal, or short stout and of equal length (figs 15-18); two spurs are always present apically: an upper one (fig. 2: Sap), large, of various shape and size, and another lower, generally shorter, one (fig. 2: Iap);
- c) tarsus, always consisting of five tarsomeres (fig. 2: 1ts, 2ts, 3ts) each of different shape and length, seldom with spiniform apophyses; the distal segment apically usually with two claws (fig. 2: Cla) generally strongly sclerotized, seldom more or less strongly modified or, exceptionally, setiform.

REMARKS. The morphology of the meso- and metatibiae is nearly identical. Generally mesotibiae are somewhat shorter and stouter than the metatibiae but in many cases their apical spurs are very differently shaped. The length of the superior apical spur of the hind tibiae compared with that of the first tarsal segment and the length of the latter compared with following segments variously combined is often taken into consideration as an important character at the generic level, also more rarely at the specific level.

9. METASTERNAL PLATE

The metasternum bears at centre the metasternal plate (fig. 1: Mp) which often has characters very helpful for sex identification. It may be flat, concave, rarely convex; glabrous or pubescent; smooth or punctured; with or without a median longitudinal groove sometimes ending in a more or less wide foveola.

10. ABDOMEN

Only the pygidium and aedeagus are herewith considered, because the other abdominal structures are not or rarely used in the taxonomy of Aphodiinae.

- A) PYGIDIUM (fig. 1: Py), the eighth exposed triangular tergite; mainly sclerotized at distal margins; either punctured or smooth; glabrous or more or less densely and elongately pubescent; regularly convex or exceptionally with more or less deep impressions;

B) AEDEAGUS (fig. 6), of constant and well differentiated shape for most species, in Aphodiinae systematics it is of fundamental importance. It is composed of two parts connected by a membrane (fig. 6: Me):

- a) tegmen (fig. 6: Te), a basal, usually asymmetric part, opened at its lower proximal face;
- b) paramera (fig. 6: Pa), dorsally and ventrally hollowed at middle, variously sclerotized, shaped and sized; they bear on the inner side a membranous process (fig. 6: Pm) which, at rest, is placed upon the process of the other; sometimes they have more or less strongly widened membranous processes and/or provided by more or less distinct pubescence apically. Their upper face is usually smooth, rarely roughened with granules.

11. MOUTH PARTS

Epipharynx (figs 19-20)⁶: it is the only structure to be dealt with here. It is a movable blade connected to the inferior surface of the epicranium within the epistomal area. In a group of closely related species, it lacks relevant morphological differences, helping to detect and justify homogeneous groupings at supraspecific levels. Only the ventral face bears complex structures. Areolae and processes have a well defined nomenclature (cfr. G. Dellacasa, 1978).

The ones most taxonomically important are:

- a) acropariae (figs 19-20: Ac), fine bristled fringes, more or less densely arranged along the anterior margin of epipharynx;
- b) chaetopariae (figs 19-20: Ch), spinules usually uniserially arranged and gradually shortened as they approach the proplegmatium;
- c) pedia and pariae, paried subregions generally provided with dense pubescence [prophobae (figs 19-20: Pr) and apophobae (figs 19-20: Ap)] sometimes with mixed chaetae similar to those of chaetopariae and rather irregularly arranged;
- d) corypha (figs 19-20: Co), median proapical region generally with elongate spiculae distally; seldom lacking;
- e) epitorma (figs 19-20: Ep), median-anterior subregion usually extended toward corypha and nearly always narrowed anteriorly; seldom either faint or lacking at all;
- f) tormae (figs 19-20: To), more or less slender and reversely elongate proximal processes of pariae;
- g) nesium (figs 19-20: Ne), usually nicely evident and sclerotized, sometimes bilobate and generally provided with several sensilla.

REMARKS. Two kinds of epipharynx (Stebnicka & Howden, 1995) are distinguishable⁷:

- adapted mainly for coprophagy (fig. 19) in which acropariae are dense and more or

⁶ Epipharynx is intended in Aphodiinae systematics as the inferior side of *labrum* (Bordat, 1992); it is also named "labre-epipharynx" (Pluot-Sigwaldt, 1997) or "*labrum*" (Carpaneto & Piattella, 1990).

⁷ Due to the bionomy of Aphodiidae, we retain a more appropriate definition of the two kinds of epipharynx that herein adopted instead of "adapted for soft saprophagy" and "adapted for hard saprophagy" as proposed by Stebnicka & Howden (*l.c.*).

less elongate; chaetopariae are relatively slender, more elongate and densely arranged; prophobae and apophobae are usually dense and more or less widely diffuse; corypha is usually distinctly protruding anteriorly and generally provided with several more or less elongate spiculae; epitorma thick and provided with numerous heli and sensilla; nesium well defined and evident;

- adapted mainly for saprophagy (fig. 20) in which acropariae are reduced to a few sparse spinules placed toward corypha; chaetopariae more stout but more sparse and shortened; prophobae and apophobae are lacking or quite reduced; corypha usually not protruding beyond front margin and provided apically with a few short spiculae only; epitorma and nesium either faint or lacking at all.

12. SECONDARY SEXUAL CHARACTERS

The secondary sexual characters of Aphodiinae though not so strong impressing as those of other Scarabaeoidea, are often quite evident. They differ from group to group and from species to species. Comparing the sexual male characteristics with those of females, it results in the following male differences:

- a) head often relatively larger, more widened toward clypeal margin and bearing more evident processes; frontal suture with more raised and distinct tubercles; the epistome is more strongly gibbous and, rarely, tuberculate;
- b) pronotum generally parallel-sided; occasionally with a median impression at its front margin; punctation, mainly on disc, relatively more superficial and sparse; its greater width often exceeds elytral base; rarely with anteriorly directed central tubercle;
- c) elytra relatively more distinctly parallel-sided; less convex and with interstices less coarsely and densely punctured but usually more diffusely pubescent;
- d) anterior tibiae relatively more elongate; sometimes distal half widened at inner side; the apical spur is shorter; it may be leaf-shaped, spatulate, apically truncate or hooked, sometimes abruptly curved downward, quite seldom absent; the teeth at outer margin may be two instead of three;
- e) middle tibiae seldom with aberrant apical shape; their inferior apical spurs sometimes shortened, truncate or hooked apically, spatulate or, exceptionally, absent; the lower inner apical margin occasionally more or less strongly lobate;
- f) hind tibiae may be relatively more distinctly apically broadened; the length of the upper apical spur, compared with the one of the metabasitarsomere occasionally offers a discrete sexual character;
- g) metasternal plate often more distinctly impressed, punctured, pubescent and with a more strongly impressed central longitudinal groove sometimes broadened to form a posterior foveola.

Care should be taken because, though rarely, the secondary sexual characters are reversed from one sex to other.

Part I
SYSTEMATIC CATALOGUE

Family APHODIIDAE Leach, 1815

Subfamily APHODIINAE Leach, 1815

1. Tribe APHODIINI Leach, 1815

- 1. Genus *Sybax* Boheman, 1857
(Afrotropical region)
sulcicollis Boheman, 1857 Kenya, Tanganyika, Malawi,
Zimbabwe

- 2. Genus *Euheptaulacus* G. Dellacasa, 1983
(Palearctic region)
carinatus (Germar, 1824) Europe, Asia

- 3. Genus *Lorditomaeus* Péringuey, 1901
(Afrotropical region)
opatroides (Klug, 1855) Eastern Africa, Cameroon, Senegal,
Zaire

- 4. Genus *Heptaulacus* Mulsant, 1842
(Palearctic region)
testudinarius (Fabricius, 1775) Europe

- 5. Genus *Paracoptochirus* Balthasar, 1963
(Palearctic region)
singularis (Harold, 1868) Greece, Romania, European Turkey

- 6. Genus *Osmanius* Branco & Baraud, 1988
(Palearctic region)
balthasari (Petrovitz, 1963) Turkey

- 7. Genus *Dialytes* Harold, 1869
(Nearctic region)
striatulus (Say, 1825) Eastern Canada, U.S.A.

- 8. Genus *Oxyomus* Dejean, 1833
(Subcosmopolitan)
sylvestris (Scopoli, 1763) Northern America, Western and
Central Asia, Europe

- 9. Genus *Renaudius* Balthasar, 1951
(Oriental and Palearctic region)
tesari (Paulian, 1942) China

- 10. Genus *Koreoxyomus* Kim, 1996
(Palearctic region)
koreanus Kim, 1996 South Korea

- 11. Genus *Mozartius* Nomura & Nakane, 1951
(Palearctic region)
testaceus Nomura & Nakane, 1951 Japan

12. Genus *Xenoheptaulacus* Hinton, 1934
(Neotropical region and Mexican Transition Zone)
tricostatus (Harold, 1869) Columbia, Panama, Venezuela
13. Genus *Megatelus* Reitter, 1892
(Afrotropical, Oriental and Palearctic region)
brahminus (Harold, 1879).....Burma, Cambodia, Laos, Thailand
14. Genus *Megateloides* Landin, 1974
(Afrotropical and Oriental region)
dimidiatus (Roth, 1851) Cameroon, Ethiopia, Nigeria,
Transvaal, Zambia, Zimbabwe
15. Genus *Pseudoahermodontus* G. Dellacasa & M. Dellacasa, 1998
(Palearctic region)
benesi G. Dellacasa & M. Dellacasa, 1998.....China
16. Genus *Otophorus* Mulsant, 1842
(Holarctic region and Mexican Transition Zone)
haemorrhoidalis (Linné, 1758) Mediterranean Africa, North
America, Asia, Europe, Mexico
17. Genus *Pseudoteuchestes* G. Dellacasa, 1986
(Palearctic region)
schirparakensis (Petrovitz, 1955) Afghanistan
18. Genus *Teuchestes* Mulsant, 1842
(Australian (?), Afrotropical, Oriental and Palearctic region)
fossor (Linné, 1758) North America, Asia, Europe
19. Genus *Macroretrus* Péringuey, 1908
(Afrotropical region)
singularis Péringuey, 1908.....Angola, Malawi, Zimbabwe
20. Genus *Diapterna* Horn, 1887
(Nearctic region and Mexican Transition Zone)
hamatus (Say, 1824).....Canada, U.S.A.
21. Genus *Neodiapterna* G. Dellacasa, 1986
(Neotropical region)
erichsoni (Harold, 1861) Argentina, Brazil, Paraguay
22. Genus *Sinodiapterna* G. Dellacasa, 1986
(Palearctic region)
troitzkyi (Jacobson, 1896) China, Japan, Korea, Manchuria,
Siberia, Taiwan
23. Genus *Afrodiapterna* G. Dellacasa, 1984
(Afrotropical region)
heleninae (G. Dellacasa, 1984).....Ivory Coast, Uganda
24. Genus *Colobopteroides* Paulian, 1942
(Afrotropical region)
latus (A. Schmidt, 1911).....Ethiopia, Kenya, Tanzania

25. Genus *Microteuchestes* Landin, 1974
 (Afrotropical region)
brusewitzi (Landin, 1974) Ethiopia, Ivory Coast, South Africa
26. Genus *Eupleurus* Mulsant, 1842
 (Holarctic region)
subterraneus (Linné, 1758).....Mediterranean Africa, Europe,
 Northern and South-western Asia,
 Canada, U.S.A.
27. Genus *Colobopteridius* Clément, 1958
 (Afrotropical region)
renaudi (Clément, 1958) Western Afrotropical region
28. Genus *Calocolobopterus* G. Dellacasa, 1986
 (Afrotropical region)
senegalensis (Klug, 1835).....Panafrican (?) species
29. Genus *Neocolobopterus* Landin, 1974
 (Afrotropical region)
abyssinicus (Harold, 1861) Ethiopia
30. Genus *Colobopterus* Mulsant, 1842
 (Holarctic and Oriental region)
erraticus (Linné, 1758) Asia, Europe, India, U.S.A.
31. Genus *Simogonius* Harold, 1871
 (Afrotropical region)
beccarii Harold, 1871 Burundi, Cameroon, Ethiopia,
 Kenya, Malawi, Zaire, Zimbabwe
32. Genus *Acanthaphodius* A. Schmidt, 1909
 (Neotropical region)
bruchii A. Schmidt, 1909 Argentina, Chile
33. Genus *Cnemisus* Motschulsky, 1868
 (Palearctic region)
rufescens (Motschulsky, 1845).....Kazakhstan, Russia
34. Genus *Sugrames* Reitter, 1894
 (Palearctic region)
hauseri Reitter, 1894 Afghanistan, Turkestan
35. Genus *Mothon* Semenov & Medvedev, 1927
 (Palearctic region)
sarmaticus (Semenov & Medvedev, 1927) Ukraine
36. Genus *Xeropsamobeus* Saylor, 1937
 (Nearctic region)
desertus (VanDyke, 1918) U.S.A. (California)
37. Genus *Sitiphus* Fairmaire, 1894
 (Palearctic region)
brevitarsis (Reitter, 1894) Algeria, Tunisia

38. Genus *Mendidius* Harold, 1868
(Afrotropical (?), Nearctic (?), Oriental (?) and Palearctic region)
fimbriolatus (Mannerheim, 1849) Central and North-eastern Asia
39. Genus *Cnemargulus* Semenov, 1903
(Palearctic region)
krulikovskyi Semenov, 1903 Turkmenistan
40. Genus *Apsteiniella* A. Schmidt, 1916
(Palearctic region)
georgii (W. Koshantschikov, 1912) Turkmenistan
41. Genus *Ahermodontus* Baguena, 1930
(Palearctic region)
marini Baguena, 1930 Spain
42. Genus *Ammonoecius* Mulsant, 1842
(Afrotropical, Palearctic and Oriental (?) region)
elevatus (Olivier, 1789) Mediterranean Africa, France, Italy, Morocco, Portugal, Spain
43. Genus *Plagiogonus* Mulsant, 1842
(Afrotropical, Oriental and Palearctic region)
putridus (Geoffroy in Fourcroy, 1785) Europe, Asia Minor
44. Genus *Carinaulus* Tesař, 1945
(Oriental and Palearctic region)
vseteckai (Tesař, 1945) China
45. Genus *Sussorca* Paulian, 1954
(Afrotropical region)
lusingae (Paulian, 1954) Zaire
46. Genus *Harmodactylus* Péringuey, 1901
(Afrotropical region)
oscitans Péringuey, 1901 South Africa
47. Genus *Anomalurobius* Paulian, 1952
(Afrotropical region)
eburneus Paulian, 1952 Ivory Coast
48. Genus *Pharaphodius* Reitter, 1892
(Afrotropical (?), Oriental and Palearctic region; Mexican Transition Zone (?))
marginellus (Fabricius, 1781) India, Nepal, Pakistan
49. Genus *Coptochiroides* Balthasar, 1938
(Palearctic region)
subcostatus (Kolbe, 1886) Central and South-eastern Asia
50. Genus *Nolicus* Petrovitz, 1962
(Afrotropical region)
veteranus (Petrovitz, 1962) Namibia, South Africa
51. Genus *Arrowiellus* Balthasar, 1933
(Afrotropical region)
mulciber (Balthasar, 1933) Tanzania

52. Genus *Hemicyclium* A. Schmidt, 1913
(Afrotropical region)
unicornutum (A. Schmidt, 1909) Mozambique, South Africa,
Tanzania, Rwanda, Zaire, Zimbabwe
53. Genus *Craterocyphus* A. Schmidt, 1913
(Afrotropical region)
magnificus (A. Schmidt, 1909) Ethiopia, Tanzania
54. Genus *Exaphodius* Endrödi, 1960
(Afrotropical region)
excellens Endrödi, 1960 Central African Republic, Gabon,
Zaire
55. Genus *Anomius* Mulsant & Rey, 1870
(Palearctic region)
castaneus (Illiger, 1803) Italy, Mediterranean Africa,
Morocco, Portugal, Spain
56. Genus *Acrossoides* A. Schmidt, 1913
(Australian region)
yorkensis (Blackburn, 1892) Australia
57. Genus *Coprimorphus* Mulsant, 1842
(Western Palearctic region)
scrutator (Herbst, 1789) South-western Asia, Central and
Southern Europe
58. Genus *Alocoderus* A. Schmidt, 1913
(Afrotropical, Palearctic and Oriental region)
semenowi (Reitter, 1887) China, Nepal, Tibet, Turkmenistan
59. Genus *Loraspis* Mulsant & Rey, 1870
(Palearctic region)
frater (Mulsant & Rey, 1870) Asia, Southern Europe
60. Genus *Pseudagoliinus* Bordat, 1994
(Afrotropical region)
sinuatipes (Bordat, 1994) South Africa
61. Genus *Coelotrachelus* A. Schmidt, 1913
(Nearctic region and Mexican Transition Zone)
kuntzeni (A. Schmidt, 1913) Mexico
62. Genus *Tetraclipeoides* A. Schmidt, 1913
(Afrotropical (?), Nearctic and Neotropical region)
denticulatus (Haldeman, 1848) U.S.A.
63. Genus *Turanella* Semenov, 1905
(Palearctic region)
latevittis (Reitter, 1887) Central Asia
64. Genus *Calamosternus* Motschulsky, 1859
(Subcosmopolitan)
granarius (Linné, 1767) Subcosmopolitan species

65. Genus *Pseudesymus* d'Orbigny, 1896
(Palearctic region)
lucidus (Klug, 1845).....Mediterranean Africa, Arabia,
Central Asia, Canary Islands
66. Genus *Siamaphodius* Masumoto, 1991
(Oriental region)
naafon (Masumoto, 1991).....Thailand
67. Genus *Liothorax* Motschulsky, 1859
(Nearctic (?), Oriental and Palearctic region)
plagiatus (Linné, 1767) Asia Minor, China, Europe, Syria,
Russia, Siberia
68. Genus *Labarrus* Mulsant & Rey, 1870
(Subcosmopolitan)
lividus (Olivier, 1789) Subcosmopolitan species
69. Genus *Nialaphodius* Kolbe, 1908
(Afrotropical, Nearctic, Neotropical region and Mexican Transition Zone)
nigrita (Fabricius, 1801) Central and Southern Africa,
Central America, Northern South
America, Madagascar, Mascarene,
Seychelles
70. Genus *Trichonotulus* Bedel, 1911
(Afrotropical (?), Holarctic and Oriental region)
scrofa (Fabricius, 1787) Mediterranean Africa, Asia Minor,
Canada, Europe, U.S.A.
71. Genus *Nialosternus* Hollande & Théron, 1999
(Palearctic region)
sitiphoides (d'Orbigny, 1896) Mediterranean Africa, Israel, Syria,
Iraq, Saudi Arabia
72. Genus *Orodaliscus* Reitter, 1900
(Palearctic region)
rotundangulus (Reitter, 1900) Central Asia, South-eastern Europe
73. Genus *Mecynodes* Mulsant & Rey, 1870
(Palearctic region)
striatulus (Waltl, 1835) Asia, Southern Europe
74. Genus *Volinus* Mulsant & Rey, 1870
(Palearctic region)
sticticus (Panzer, 1798) South-western Asia, Europe
75. Genus *Phaeaphodius* Reitter, 1892
(Holarctic region)
rectus (Motschulsky, 1866) North America, Asia
76. Genus *Aphodobius* Péringuey, 1901
(Afrotropical region)
inornatus (A. Schmidt, 1908) South Africa

77. Genus *Mesontoplatys* Motschulsky, 1863
(Afrotropical and Oriental region)
rufolaterus Motschulsky, 1863.....Southern India, Sri Lanka
78. Genus *Erytus* Mulsant & Rey, 1870
(Palearctic region)
cognatus (Fairmaire, 1860) Mediterranean Africa, South-western and Central Asia, Southern Europe
79. Genus *Pleuraphodius* A. Schmidt, 1913
(Afrotropical, Oriental and Palearctic region)
mutilus (A. Schmidt, 1911).....South Africa
80. Genus *Euorodalus* G. Dellacasa, 1983
(Palearctic region)
coenosus (Panzer, 1798).....Central and Northern Europe
81. Genus *Doaphius* Balthasar, 1941
(Afrotropical region)
rufopolitus Balthasar, 1941 Somalia
[*gracilioides* Paulian, 1942 Ethiopia, Kenya, Somalia (?)]
82. Genus *Koshantschikovius* A. Schmidt, 1913
(Afrotropical and Oriental region)
substriatus (A. Schmidt, 1911) Cameroon, Ethiopia, Kenya
83. Genus *Esymus* Mulsant & Rey, 1870
(Palearctic region)
merdarius (Fabricius, 1775).....Asia, Europe
84. Genus *Phalacronothus* Motschulsky, 1859
(Palearctic region)
quadrinaculatus (Linné, 1761).....Western Mediterranean Africa, Asia Minor, Central and Northern Asia, Europe, Morocco
85. Genus *Aphodoharmogaster* Endrödi, 1983
(Afrotropical region)
costata Endrödi, 1983 South Africa, Transkei
86. Genus *Podotenoides* Paulian, 1942
(Afrotropical region)
jeannelianus (Balthasar, 1945).....Kenya
87. Genus *Paradidactylia* Balthasar, 1937
(Afrotropical, Oriental and Palearctic region)
venaloides (Endrödi, 1960) Kenya, Tanzania, Uganda, Zaire
88. Genus *Nialus* Mulsant & Rey, 1870
(Afrotropical (?) and Palearctic region)
varians (Duftschmid, 1805) Western Mediterranean Africa, Asia, Central and Southern Europe

89. Genus *Pseudopharaphodius* Bordat, 1990
 (Afrotropical region, Madagascar)
anthrax (Gerstaecker, 1871) from Ethiopia to South Africa,
 Namibia
90. Genus *Neocalaphodius* Bordat, 1990
 (Afrotropical, Oriental and Palearctic region)
moestus (Fabricius, 1801) Africa, Southern Asia, Madagascar
91. Genus *Basilewskyanus* Endrödi, 1956
 (Afrotropical region)
elisabethae (Endrödi, 1956) Zaire
92. Genus *Lindbergianus* Petrovitz, 1961
 (Palearctic region)
solitarius (Petrovitz, 1961) Afghanistan
93. Genus *Paulianellus* Balthasar, 1938
 (Oriental and Palearctic region)
maderi (Balthasar, 1938) China, Korea, Nepal, Thailand
94. Genus *Biralus* Mulsant & Rey, 1870
 (Palearctic region)
satellitius (Herbst, 1789) Mediterranean Africa, Central and
 Southern Asia, Southern Europe
95. Genus *Blackburneus* A. Schmidt, 1913
 (Afrotropical (?), Neotropical and Oriental (?) region)
furcatus (A. Schmidt, 1909) Brazil
96. Genus *Subrinus* Mulsant & Rey, 1870
 (Afrotropical and Palearctic region)
sturmi (Harold, 1870) Mediterranean Africa, South-
 eastern Asia, Southern Europe
97. Genus *Loboparius* A. Schmidt, 1913
 (Oriental and Palearctic region)
globulus (Harold, 1859) China, Japan, Taiwan
98. Genus *Paranimbus* A. Schmidt, 1913
 (Neotropical region)
peruanus (Erichson, 1834) Peru, Bolivia
99. Genus *Pseudopodotenus* G. Dellacasa, 1990
 (Neotropical region)
fulviventris (Fairmaire, 1860) Chile
100. Genus *Platyderides* A. Schmidt, 1916
 (Oriental and Palearctic region)
arrowi (A. Schmidt, 1910) China
101. Genus *Cinacanthus* A. Schmidt, 1913
 (Nearctic region)
militaris (LeConte, 1858) U.S.A.

102. Genus *Drepanocanthoides* A. Schmidt, 1913
(Australian (?) and Nearctic region)
walshi (Horn, 1870) Canada, U.S.A.
103. Genus *Orodaliscoides* A. Schmidt, 1913
(Neotropical region)
rugosiceps (Harold, 1859).....Chile, Peru
104. Genus *Dialytellus* W. J. Brown, 1929
(Nearctic region)
humeralis (LeConte, 1878) Canada, U.S.A.
105. Genus *Aparammoecius* Petrovitz, 1958
(Oriental and Palearctic region)
isaburoi (Nakane, 1956).....Japan
106. Genus *Acanthobodilus* G. Dellacasa, 1983
(Palearctic region)
immundus (Creutzer, 1799) Mediterranean Africa, Asia, Europe
107. Genus *Parammoecius* Seidlitz, 1891
(Palearctic region)
gibbus (Germar, 1817) Central and Southern Europe
108. Genus *Nimbus* Mulsant & Rey, 1870
(Palearctic region)
obliteratus (Panzer, 1823) Central and Southern Europe
109. Genus *Chilo thorax* Motschulsky, 1859
(Afrotropical (?), Holarctic, Neotropical (?) and Oriental region)
conspurcatus (Linné, 1758).....Europe
110. Genus *Nipponaphodius* Nakane, 1959
(Palearctic region)
gotoi (Nomura & Nakane, 1951).....Japan
111. Genus *Loraphodius* Reitter, 1892
(Palearctic region)
suarius (Faldermann, 1835) South-western Asia, Southern Europe
112. Genus *Aphodiellus* A. Schmidt, 1913
(Afrotropical (?) and Palearctic region)
impunctatus (Waterhouse, 1875).....China, Japan, Eastern Siberia
113. Genus *Nobius* Mulsant & Rey, 1870
(Palearctic region)
serotinus (Panzer, 1799) Central and South-eastern Europe, Siberia
114. Genus *Erytodes* A. Schmidt, 1916
(Oriental region)
confirmatus (A. Schmidt, 1916) India

115. Genus *Pseudagolius* A. Schmidt, 1913
 (Nearctic region and Mexican Transition Zone)
coloradensis (Horn, 1870) Mexico, U.S.A.
116. Genus *Eudolus* Mulsant & Rey, 1870
 (Palearctic region)
quadriguttatus (Herbst, 1783).....South-western Asia, Europe
117. Genus *Gilletianus* Balthasar, 1933
 (Oriental and Palearctic region)
proclivis (Balthasar, 1933) China
118. Genus *Lunaphodius* Balthasar, 1964
 (Palearctic region)
lunifer (Solsky, 1876).....Central Asia
119. Genus *Bodilus* Mulsant & Rey, 1870
 (Afrotropical, Nearctic (?) and Palearctic region)
lugens (Creutzer, 1799).....Mediterranean Africa, Asia, Europe
120. Genus *Melinopterus* Mulsant, 1842
 (Holarctic region)
prodromus (Brahm, 1790).....Mediterranean Africa, Canada,
 Europe, U.S.A.
121. Genus *Pubinus* Mulsant & Rey, 1870
 (Palearctic region)
tomentosus (O. F. Müller, 1776).....Northern Asia, Northern and
 Central Europe
122. Genus *Sigorus* Mulsant & Rey, 1870
 (Palearctic region)
porcus (Fabricius, 1792).....Asia Minor, Central and Southern
 Europe
123. Genus *Amidorus* Mulsant & Rey, 1870
 (Palearctic region)
obscurus (Fabricius, 1792).....Asia, Europe
124. Genus *Pseudacrossus* Reitter, 1892
 (Palearctic region)
grombczewskyi (D. Koshantschikov, 1891).....Central Asia
125. Genus *Qingaphodius* Král, 1997
 (Palearctic region)
nikodymi (Král, 1997) China
126. Genus *Mendidaphodius* Reitter, 1901
 (Afrotropical, Nearctic (?) and Palearctic region)
spinifrontis (Reitter, 1901) Kazakhstan
127. Genus *Podotenus* A. Schmidt, 1913
 (Australian and Neotropical region)
insignior (Blackburn, 1904).....South-western Australia

128. Genus *Symphodon* A. Schmidt, 1913
(Neotropical region)
anomalum (Harold, 1874) Chile
129. Genus *Cephalocyclus* M. Dellacasa, Gordon & G. Dellacasa, 1998
(Nearctic region and Mexican Transition Zone)
fuliginosus (Harold, 1863) Guatemala, Mexico
130. Genus *Aganocrossus* Reitter, 1895
(Afrotropical, Australian, Oriental and Palearctic region)
postpilosus (Reitter, 1895).....China, India, Japan, Laos, Sikkim,
South Korea, Vietnam
131. Genus *Sinaphodius* Červenka, 1994
(Oriental and Palearctic region)
yunnanus (Červenka, 1994) China
132. Genus *Brachiaphodius* W. Koshantschikov, 1913
(Afrotropical, Oriental and Palearctic region)
pilosus (Harold, 1874).....North-eastern India, Nepal
133. Genus *Gonaphodius* Reitter, 1892
(Palearctic region)
scoparius (Harold, 1877) Mongolia, Russia, Tibet, Chinese
Turkestan
134. Genus *Aphodiopsis* Paulian, 1942
(Afrotropical region)
latipes Paulian, 1942 Ivory Coast
135. Genus *Gonaphodiellus* A. Schmidt, 1913
(Nearctic and Neotropical region)
pacatus (Harold, 1880) Columbia
136. Genus *Oromus* Mulsant & Rey, 1870
(Palearctic region)
alpinus (Scopoli, 1763) Central and Southern Europe
137. Genus *Limarus* Mulsant & Rey, 1870
(Palearctic region)
zenkeri (Germar, 1813) Europe
138. Genus *Neoemadiellus* Clément, 1987
(Madagascar subregion)
uxoris (Clément, 1987) Central and Eastern Madagascar
139. Genus *Boucomontiellus* Balthasar, 1932
(Palearctic region)
pelliculosus (Balthasar, 1932) China
140. Genus *Emadiellus* A. Schmidt, 1913
(Afrotropical (?) and Oriental region)
rufopustulatus (Wiedemann, 1823) Cambodia, India, Laos, Thailand,
Vietnam

141. Genus *Neoheptaulacus* Paulian & Villiers, 1941
(Afrotropical region)
puberulus (Boheman, 1857).....Kenya, South Africa (Zululand)
142. Genus *Aphodaulacus* W. Koshantschikov, 1911
(Palearctic region)
turkestanicus (Heyden, 1881) Iran, Turkestan
143. Genus *Candezeollus* Stebnicka & Howden, 1995
(Australian region)
candezei (Harold, 1868).....Southern Australia
144. Genus *Acrossidius* A. Schmidt, 1913
(Australian region)
tasmaniae (Hope, 1846).....South-eastern Australia, New Zealand, Tasmania
145. Genus *Youngaphodius* Bordat, 1988
(Afrotropical region)
agullasi (Endrödi, 1983) South Africa
146. Genus *Paracrossidius* Balthasar, 1932
(Palearctic region)
instigator (Balthasar, 1932).....China
147. Genus *Acrossus* Mulsant, 1842
(Afrotropical (?), Holarctic and Oriental region)
luridus (Fabricius, 1775).....Holarctic region
148. Genus *Agolius* Mulsant & Rey, 1870
(Palearctic region)
abdominalis (Bonelli, 1812) Central and Southern Europe
149. Genus *Trichaphodius* A. Schmidt, 1913
(Afrotropical, Oriental, Nearctic (?) and Neotropical (?) region)
humilis (Roth, 1851) Oriental Africa, Tchad
150. Genus *Trichaphodioides* Paulian, 1942
(Afrotropical region)
calcaratus (Boheman, 1857).....South Africa
151. Genus *Paradeloparius* Landin, 1959
(Afrotropical region)
circumdatus (Klug, 1855) Kenya, Mozambique, Rwanda, Zambia
152. Genus *Adeloparius* A. Schmidt, 1913
(Afrotropical region)
trimaculatus (A. Schmidt, 1909) Cameroon, Zaire
153. Genus *Neagolius* W. Koshantschikov, 1913
(Palearctic region)
falcispinis (W. Koshantschikov, 1913) Chinese Turkestan, Mongolia

154. Genus *Obaphodius* Bordat, 1988
(Afrotropical region)
silvestris (Bordat, 1988) Transkei
155. Genus *Trichaphodiellus* A. Schmidt, 1913
(Neotropical region and Mexican Transition Zone)
brasiliensis (Laporte de Castelnau, 1840) Bolivia, Brazil, Colombia, Ecuador,
Peru, Venezuela
156. Genus *Trichonotuloides* Balthasar, 1945
(Mexican Transition Zone)
fossulatipennis (Balthasar, 1945) Guatemala
157. Genus *Longaphodius* Endrödi, 1980
(Afrotropical region)
namaquarum (Endrödi, 1980) South Africa
158. Genus *Oxyaphodius* Balthasar, 1965
(Palearctic region)
sikkimensis (Balthasar, 1965) Nepal, Sikkim
159. Genus *Oxycorythus* Solsky, 1876
(Palearctic region)
morawitzi Solsky, 1876 Kirghizstan, Tajikistan,
Turkmenistan, Uzbekistan
160. Genus *Stenotothorax* A. Schmidt, 1913
(Nearctic and Palearctic region)
oblongus (Say, 1823) Canada, U.S.A.
161. Genus *Planolinus* Mulsant & Rey, 1870
(Holarctic region)
uliginosus (Hardy, 1847) Asia, Europe
162. Genus *Allobodilus* Petrovitz, 1963
(Afrotropical region)
notabilis (Petrovitz, 1963) Botswana, Namibia
163. Genus *Aphodius* Illiger, 1798
(Australian, Holarctic, Oriental region and Mexican Transition Zone)
fimetarius (Linné, 1758) Northern Africa, North America,
Asia, Australia, Europe, Mexico
164. Genus *Tristaphodius* Balthasar, 1932
(Palearctic region)
mortuorum (Balthasar, 1932) China, Sikkim
165. Genus *Agoliinus* A. Schmidt, 1913
(Holarctic region)
congregatus (Mannerheim, 1853) Canada, U.S.A.
166. Genus *Agrilinus* Mulsant & Rey, 1869
(Oriental and Palearctic region)
ater (DeGeer, 1774) Asia, Europe

2. Tribe DIDACTYLINI Pittino, 1984

- 1. Genus *Aidophus* Balthasar, 1963
(Nearctic, Neotropical region and Mexican Transition Zone)
paraguayanus (Balthasar, 1963) Paraguay
- 2. Genus *Trigonoscelus* Petrovitz, 1963
(Palearctic region)
coelebs (Petrovitz, 1963).....Pakistan
- 3. Genus *Didactylia* d’Orbigny, 1896
(Afrotropical and Palearctic region; Madagascar)
pallicolor (Fairmaire, 1886).....Djibouti, Somaliland (?)
- 4. Genus *Harmogaster* Harold, 1861
(Afrotropical region)
exarata Harold, 1861 South Africa
- 5. Genus *Pseudodrepanocanthus* Bordat, 1993
(Afrotropical region)
nasutus (Harold, 1869).....South Africa
- 6. Genus *Drepanocanthus* Péringuey, 1901
(Afrotropical region)
lineatus (Wiedemann, 1823) South Africa
- 7. Genus *Pseudoxyomus* Petrovitz, 1962
(Afrotropical and Australian region)
rubescens Petrovitz, 1962 South Africa
- 8. Genus *Pseudomothon* Pittino, 1984
(Palearctic region)
arabicus Pittino, 1984 Saudi Arabia
- 9. Genus *Coptochirus* Harold, 1859
(Afrotropical region)
pteropus Harold, 1859.....South Africa
- 10. Genus *Goiginus* Endrödi, 1982
(Afrotropical region)
howdeni Endrödi, 1982 South Africa
- 11. Genus *Proctophanes* Harold, 1861
(Australian region)
sculptus (Hope, 1847) South-eastern Australia, Tasmania
- 12. Genus *Australaphodius* Balthasar, 1942
(Afrotropical, Australian, Neotropical and Nearctic region)
frenchi (Blackburn, 1892) South Africa, Australia, Chile,
Tasmania, U.S.A. (California)

Part II
DICHOTOMICAL KEYS

Family **Aphodiidae** Leach, 1815

Aphodida Leach in Brewster, 1815: 97
Aphodiidae; MacLeay 1821: 57

KEY TO SUBFAMILIES APHODIINAE AND EUPARIINAE

- 1- Basal margin of elytra never bordered (figs 31, 32); pygidium not furrowed laterally⁸; femora never grooved at fore or hind margin (fig. 33); transverse carinae of middle and hind tibiae (figs 37, 38) rarely missing; abdominal sternites usually feebly sclerificate and not fused one another⁹ but never with a transverse belt of short longitudinal carinae (fig. 33); apical spurs of hind tibiae separated each from other so that the first tarsal segment is articulated in between them (fig. 43)¹⁰; epipharynx with acropariae of different length and size (figs 24, 27)¹¹ Aphodiinae
 - 1'- Basal margin of elytra bordered (fig. 30)¹², border more or less distinct, sometimes seventh and eighth interstices are basally bordered only; pygidium usually furrowed laterally; femora generally grooved at fore or hind margin (fig. 34); transverse carinae of middle and hind tibiae usually lacking (fig. 39), only rarely existing; abdominal sternites strongly sclerificate, fused one another and with a transverse belt of short longitudinal carinae (fig. 34)¹³; apical spurs of hind tibiae attached each other so that first tarsal segment does not raise between them (figs 35, 36, 40, 41); epipharynx without acropariae (fig. 21) Eupariinae
- * * * * *

The following genus-group taxa, listed by M. Dellacasa (1988a) in Aphodiinae, because their morpho-anatomical features can no more be considered pertaining to this subfamily so we herein record their new or more recently established taxonomical position.

Genus *Aphodinus* Motschulsky, 1862

Aphodinus Motschulsky, 1862: 55 (Aphodiinae)
Ataenius Harold, 1867: 100 (*partim*) (Eupariinae)
Pseudammoecius A. Schmidt, 1913: 160 (**n. syn.**)

TYPE SPECIES: *Aphodius castanicolor* Motschulsky, 1858 (**present designation**); [junior (?) synonym of *Pseudammoecius australasiae* (Boheman, 1858)]; type, not examined, preserved in Zoologicheskij Muzej M. G. U., Moscow

REMARKS. This genus-group taxon was “described” by Motschulsky in 1862 as follows: "*Aphodius castanicolor, cancelliventris et compacticollis* Motsch., Et. 1858 = *Aphodinus* id. Motsch. n. g."

⁸ Except in some species of *Proctophanes* sensu Stebnicka & Howden, 1995.
⁹ Except in *Dialytes* and Didactyliini.
¹⁰ Except in Didactyliini.
¹¹ If acropariae are lacking, abdominal sternites are not fused one another.
¹² Except in *Saprosites* (fig. 31), which could be considered pertaining to Aphodiinae (Didactyliini).
¹³ Fluting sternites (Cartwright, 1974).

W. Koshantschikov (1916: 192) studied the types of both *castanicolor* and *cancelliventris* and, with the placet of A. Schmidt, established their synonymy versus *Aphodius australasiae* Boheman, 1858, type species of subgenus *Pseudammoecius* A. Schmidt, 1913. The synonymy of *castanicolor* versus *australasiae* was confirmed by Stebnicka & Howden (1995: 761) too, on the basis of the study of both species-group taxa types.

In the meantime, Stebnicka (1990: 898) established the new combination *Ataenius australasiae* (Boheman, 1858) thus ascribing the taxon to Eupariinae.

We are not sure that *australasiae* pertains to the genus *Ataenius* (type species *Ataenius scutellaris* Harold, 1867) but we agree with Polish author to consider this species pertaining to Eupariinae therefore also the genus-group taxon *Aphodinus* Motschulsky, 1862 has to be considered pertaining to Eupariinae.

Genus *Australammoecius* Petrovitz, 1958

Australammoecius Petrovitz, 1958b: 799 (Aphodiinae)

TYPE SPECIES: *Australammoecius demarzi* Petrovitz, 1958 (original designation); holotype, not examined, preserved in G. Frey collection, Naturhistorisches Museum, Basel.

REMARKS. The genus was correctly assigned to the subfamily Eupariinae by Stebnicka & Howden (1996: 130)

Genus *Orocanthus* Endrödi, 1983

Orocanthus Endrödi, 1983: 37 (Aphodiinae)

TYPE SPECIES: *Orocanthus helenae* Endrödi, 1983 (original designation); holotype, examined, preserved in Transvaal Museum. Pretoria

REMARKS. One of us (Bordat) examined the holotype of *Orocanthus helenae* and ascertained that it belongs beyond doubt to subfamily Psammodiinae.

Genus *Psammodaphodius* Endrödi, 1976

Psammodaphodius Endrödi, 1976: 113 (Aphodiinae)

TYPE SPECIES: *Psammodaphodius kochi* Endrödi, 1976 (original designation); holotype, examined, preserved in Transvaal Museum. Pretoria

REMARKS. The subfamily specialist R. Pittino (Milan) confirmed to us (*in verbis*) that this genus-group taxon has to be considered pertaining to Psammodiinae.

Subfamily **Aphodiinae** Leach, 1815

Aphodida Leach in Brewster, 1815: 97
Aphodiinae; Arrow, 1909: 485

KEY TO TRIBES

- 1 - Apical spurs of hind tibiae separated each from other so that first tarsal segment is articulated in between them (fig. 43); aedeagus with tegmen strongly convex, in dorsal view rounded at sides, obliquely truncate basally and distinctly gibbous before base (figs 28,29); abdominal sternites not fused one another (fig. 33)¹⁴ Aphodiini
- 1' - Apical spurs of hind tibiae very closely attached each other so that first tarsal segment does not get through them (fig. 42); aedeagus with tegmen feebly convex, in dorsal view parallelsided, usually perpendicularly truncate basally and not or faintly gibbous before base (figs 25, 26); abdominal sternites fused one another Didactyliini

Tribe APHODIINI Leach, 1815

Aphodida Leach in Brewster, 1815: 97
Aphodiini; Reitter, 1892: 156 (*partim*)

KEY TO GENERA

- 1 - Elytra with less than ten striae or the tenth extremely fine, nearly faint and strongly different from others (figs 48, 49) 2
- 1' - Elytra with ten striae, sometimes appearing as longitudinal rows of large punctures (fig. 47); the tenth, at times, more superficial and visible toward elytral base or apex only 7
- 2 (1) - Upperside with yellowish argillaceous coat (fresh specimens); lateral margins of pronotum very densely bristled (fig. 51); fore tibiae strongly widened at inner margin from base till apex (fig. 50). Length 6-11 mm. Afrotropical region *Sybx*
- 2' - Upperside without argillaceous coat; lateral margins of pronotum sometimes more or less sparsely bristled only; fore tibiae not or moderately widened at inner margin . . 3
- 3 (2') - Pronotum with simple and rather fine punctation; punctures more or less regularly circular; middle tibiae with two apical spurs in both sexes 4
- 3' - Pronotum with very strong punctation; punctures reniform, umbilicate, horse-shoe shaped (fig. 52); males middle tibiae with one apical spur only (figs 44-46) 5
- 4 (3) - Elytral striae broad or very broad; epistome with simple punctation; punctures without straight setae; epipleura normally widened. Brown-yellowish, elytra usually blackish spotted. Length 3.5-6 mm. Palearctic region *Euheptaulacus*
- 4' - Elytral striae narrow; epistome with some large punctures straightly setigerous; epipleura broad or very broad (fig. 54). Sericeous. Brown-yellowish, elytra paler with or without blackish preapical spots. Length 5-8 mm. Afrotropical region
. *Lorditomaeus*
- 5 (3') - Lateral margins of pronotum not sinuate before hind angles; latter truncate (fig. 53). Blackish, elytra reddish or yellowish with blackish spots. Length 3-4 mm, exceptionally 6-8 mm. Palearctic region *Heptaulacus*

¹⁴ Except in *Dialytes*.

5' -	Lateral margins of pronotum distinctly sinuate before hind angles; latter lobiform (fig. 55)	6
6 (5') -	Fore tibiae distinctly widened at inner margin in both sexes, their apical spurs lacking in males (figs 58, 59); tenth elytral interstice existing. Piceous. Length 6.5-8 mm. Balkan Peninsula, Iran	<i>Paracoptochirus</i>
6' -	Fore tibiae only in males widened at inner margin and with apical spur extremely reduced (figs 56, 57); tenth elytral interstice quite missing. Blackish. Length 4-5.5 mm. Libya, Turkey, Iran	<i>Osmanius</i>
7 (1') -	Fore tibiae with four teeth at outer margin, first tooth perpendicular to anterior margin, sinuosities among distal outer teeth feebly deep (fig. 65); pronotum with median longitudinal deep groove and with feeble lateral foveolae (fig. 60); abdominal sternites fused each other but with margins well distinct. Piceous or brownish. Length 4-6 mm. Canada, USA	<i>Dialytes</i>
7'-	Fore tibiae differently shaped; abdominal sternites not fused each other \	8
8 (7') -	Elytral striae represented by longitudinal rows of large transverse punctures only (fig. 61)	9
8' -	Elytral striae distinct, groovely impressed, punctured or not	10
9 (8) -	Pronotum simply punctured, punctures more or less large and circular, not bordered at base, basal margin not bristled (fig. 61). Blackish, sometimes elytra reddish. Length 3-4 mm. Subcosmopolitan (?)	<i>Oxyomus</i>
9' -	Pronotum very densely punctured, punctures carious, bordered at base, basal margin with a row of short setae more distinct at middle (fig. 67). Piceous. Length 3-4 mm. China, Thailand	<i>Renaudius</i>
10 (8') -	Pronotum with lateral and basal margins more or less strongly serrulate (figs 66, 68); front angles widely rounded and broadened outward; apterous species	11
10' -	Pronotum with lateral and basal margins not serrulate; species usually winged, only exceptionally brachypterous or apterous	12
11(10) -	Clypeus denticulate at sides of median sinuosity (fig. 66); frontal suture distinctly impressed; elytral interstices carinate. More or less dark piceous-reddish. Length 4-5 mm. South Korea	<i>Koreoxyomus</i>
11' -	Clypeus obtusely angulate at sides of median sinuosity (fig. 68); frontal suture nearly faint; elytral interstices more or less strongly convex. Brown-reddish. Length 3.5-4.5 mm. Japan	<i>Mozartius</i>
12 (10') -	Third, fifth and seventh elytral interstices costiform (fig. 62), other flat; epipleura wide, distinct till suture apical angle; eyes very large. Reddish-testaceous. Length 3.5-4 mm. Panama, Venezuela, Columbia	<i>Xenoheptaulacus</i>
12' -	Not all of the above characters simultaneously present	13
13 (12') -	Scutellum large, at least as long as 1/6 of sutural margin of elytra or longer (fig. 69)	14
13' -	Scutellum small, at most as long as 1/7 of sutural margin of elytra or shorter (figs 70, 71)	31
14 (13) -	Elytra shorter than head plus pronotum (figs 72, 73)	15
14' -	Elytra longer than head plus pronotum or, at most, as long as head plus pronotum	16
15 (14)-	Elytra distinctly pubescent in the apical third (fig. 72); median tubercle of frontal	

	suture transverse; clypeus rounded at sides. Black, elytra more or less widely reddish or yellowish with or without blackish spots. Length 3-5 mm. Afrotropical, Oriental and Palearctic region	<i>Megatelus</i>
15' -	Elytra glabrous (fig. 73); median tubercle of frontal suture conical; clypeus angularly bisinuate at sides. Blackish, elytra either blackish with shoulder and apex more or less widely reddish or testaceous with lateral blackish spot at middle. Length 3-4 mm. Afrotropical and Oriental region	<i>Megateloides</i>
16 (14') -	Elytra regularly convex on disc (fig. 87)	17
16' -	Elytra more or less flattened on disc (figs 88, 89)	25
17 (16) -	Clypeus quadridentate, not at all bristled; epistome with distinct transverse carina (figs 74, 86); (males unknown). Shining black. Length 5 mm. China	
		<i>Pseudoahermodontus</i>
17' -	Clypeus not quadridentate	18
18 (17') -	Frontal suture tuberculate	19
18' -	Frontal suture not tuberculate	21
19 (18) -	Genae auriculate (fig. 81); scutellum relatively narrow, triangularly elongate (fig. 75), feebly sunk below elytral surface. Blackish, elytra with more or less widened reddish spots, rarely quite reddish. Length 4-5 mm. Holarctic region, Mexican Transition Zone	<i>Otophorus</i>
19' -	Genae not auriculate	20
20 (19') -	Frontal suture trituberculate, median tubercle umbilicate at tip (fig. 83); pronotum, in males, without impression at middle of front margin (fig. 77). Blackish, sometimes elytra with more or less widened yellowish spots. Length 5-8 mm. Afghanistan	
		<i>Pseudoteuchestes</i>
20' -	Frontal suture trituberculate, median tubercle regularly acuminate at tip (fig. 82); pronotum, in males, with distinct impression at middle of front margin (fig. 76). Blackish, elytra sometimes brown, reddish or yellowish with or without blackish spots. Length 7-15 mm. Afrotropical, Holarctic and Oriental region	<i>Teuchestes</i>
21 (18') -	Hind tibiae apically fimbriate with elongate and more or less unequal spinules (fig. 63)	22
21' -	Hind tibiae apically fimbriate with short and equal spinules (fig. 64)	24
22 (21) -	Scutellum wide, shortly triangular (fig. 79); claws of middle tarsi, in males, deformed, large and unequal (fig. 91). Blackish or dark brownish, elytra more or less widely reddish or brown-yellowish. Length 2.5-5 mm. Afrotropical region	
		<i>Macroretrus</i>
22' -	Scutellum narrow, elongately triangular; claws of middle tarsi normally shaped in both sexes	23
23 (22') -	Hind tibiae superior apical spur as long as or longer than first segment of tarsi; latter, in males, V-shaped (fig. 97); fore tibiae apical spur, in males, large and spatulate (figs 93, 98). Blackish or piceous, elytra sometimes yellowish with a discal brownish spot or with longitudinal piceous strips. Length 4-8 mm. Nearctic region, Mexican Transition Zone	<i>Diapterna</i>
23' -	Hind tibiae superior apical spur shorter than first segment of tarsi; latter, in males, normally shaped; fore tibiae apical spur, in males, regularly acuminate toward apex (fig. 99). Blackish, elytra apically yellowish. Length 7-9 mm. Neotropical region	<i>Neodiapterna</i>

24 (21') -	Clypeus denticulate at sides (figs 85, 101); elytral striae fine and rather superficial. Shining black. Length 3-6 mm. Eastern Palearctic region	<i>Sinodiapterna</i>
24' -	Clypeus rounded at sides (figs 84, 100); elytral striae deep and strongly crenulate. Blackish, elytra with apical reddish spot. Length 4-6 mm. Ivory Coast, Uganda	<i>Afrodiapterna</i>
25 (16') -	Upperside distinctly quite pubescent (fig. 80). Piceous-black. Length 4-5 mm. North-eastern Afrotropical region	<i>Colobopteroides</i>
25' -	Upperside nearly quite glabrous; rarely scutellum and elytral apex shortly pubescent only	26
26 (25') -	Elytra regularly rounded apically, pygidium not exposed (figs 75, 102); frontal suture distinctly trituberculate	27
26' -	Elytra more or less distinctly truncate apically so that pygidium is more or less widely exposed (figs 103-106); frontal suture never trituberculate, epistome often with central tubercle, seldom placed near clypeal margin	28
27 (26) -	Clypeus subdenticulate at sides; elytra shortly oval (fig 78); (females unknown). Shining black. Length 3-4 mm. North-eastern Afrotropical region . . .	<i>Microteuchestes</i>
27' -	Clypeus rounded at sides; elytra elongate, parallel-sided at basal third (fig. 102). Black, sometimes elytra brownish or reddish. Length 5-8 mm. Holarctic region	<i>Eupleurus</i>
28 (26') -	Clypeus, in males, with a more or less raised tubercle backward curved (figs 90, 104); (females unknown). Dark testaceous, head, pronotal and elytral disc piceous. Length 8-10 mm. Western Afrotropical region	<i>Colobopteridius</i>
28' -	Clypeus without tubercle	29
29 (28') -	Species of relative larger size (length 8-16 mm); elytra feebly flattened on disc (figs 88, 106). Testaceous, sometimes pronotal and elytral disc piceous, rarely quite piceous. Afrotropical region	<i>Calocolobopterus</i>
29' -	Species of relative smaller size (length 5-12 mm); elytra strongly flattened on disc (figs 89, 103, 105)	30
30 (29') -	Pronotum black with wide lateral yellowish margins, at least front angles yellowish; males, often, with impression at middle of front margin (fig. 103); aedeagus (dorsal view) with paramera provided by several small granules. Head blackish; elytra yellowish, sometimes with cloudy discal spot or quite piceous. Length 5-10 mm. Afrotropical region	<i>Neocolobopterus</i>
30' -	Pronotum quite black; aedeagus with smooth paramera; males, always, without impression at middle of front margin (fig. 105). Head blackish; elytra yellowish, often with cloudy discal spot or quite blackish. Length 5-12 mm. Holarctic and Oriental region	<i>Colobopterus</i>
31 (13') -	Hind angles of pronotum downward reflexed, invisible from above (figs 96, 107); fore tibiae perpendicularly truncate apically (fig. 94). Blackish, often clypeal margin and front angles of pronotum shadowy reddish. Length 2.5-5 mm. Afrotropical region	<i>Simogonius</i>
31' -	Hind angles of pronotum differently shaped but always visible from above	32
32 (31') -	Posterior margin of hind femora, in males, with horn-shaped elongate process apically globulous (fig. 92), (females unknown); fore tibiae without apical spur, outer margin with two distal teeth only, third tooth perpendicular to front margin (figs 95, 108).	

	Piceous, elytra yellowish with blackish spots. Length 3-4 mm. Argentina, Chile	
		<i>Acanthaphodius</i>
32' -	Posterior margin of hind femora lacking of such a process	33
33 (32') -	Epistome usually granulate, sometimes rugosely punctured; clypeus quite bristled, often denticulate; pronotum bordered at base; hind tibiae usually widened toward apex, fimbriate with very short and equal apical spinules; tarsal segments usually with elongate apical setae. Species convex, blackish, elytra testaceous with darker suture, rarely quite reddish or piceous; taxa usually sabuliculous	34
33' -	Not all of the above characters simultaneously present	41
34 (33) -	Claws of hind tarsi hair-shaped, identical to tarsal apical hairs (fig. 123)	35
34' -	Claws of hind tarsi corneous, usually strongly curved	36
35 (34) -	Species of relative larger size (7-10 mm); clypeus distinctly quadridenticulate (fig. 112); middle tibiae superior apical spur normally shaped; hind femora roundly flattened, apical spurs of hind tibiae compressed (fig. 131); male pronotum without impression at middle of front margin. Brown-reddish. Length 7-10 mm. Central-eastern Palearctic region	<i>Cnemisus</i>
35' -	Species of relative smaller size (3.5-4 mm); clypeus denticulate (fig. 113); middle tibiae superior apical spur strongly curved toward apex (fig. 123); hind femora moderately widened, apical spurs of hind tibiae feebly compressed (fig. 129); male pronotum with distinct impression at middle of front margin. Blackish or brownish, elytra sometimes yellowish. Length 3.5-4 mm. Central Asia	<i>Sugrames</i>
36 (34') -	Punctuation of pronotum disc variolous-foveolate, subconfluent (fig. 125); apical spurs of hind tibiae leaf shaped (fig. 127). Testaceous-reddish, elytra paler. Length 4-5 mm. Southern Ukraine	<i>Mothon</i>
36' -	Punctuation of pronotum disc more or less large, even and coarse but not variolous-foveolate and not confluent	37
37 (36') -	Epistome subrugosely punctured; hind tibiae short, strongly widened toward apex; segments of hind tarsi very short and stout (fig. 120)	38
37' -	Epistome granulately punctured (fig. 121); punctures sometimes setigerous (fig. 122); hind tibiae rather elongate and more or less distinctly widened toward apex; segments of hind tarsi rather elongate	39
38 (37) -	Clypeus denticulate at sides; epistome with transverse carina; frontal suture tuberculate (fig. 116); hind angles of pronotum widely rounded (fig. 115); apical spurs of hind tibiae flattened, nearly leaf-shaped (fig. 120). Reddish-piceous, elytra pale testaceous. Length 3.5-4 mm. Southern California	<i>Xeropsamobeus</i>
38' -	Clypeus rounded at sides; epistome without transverse carina; frontal suture not tuberculate; hind angles of pronotum obtuse (fig. 109); hind tibiae short, stout, strongly widened apically, their apical spurs stout (fig. 130). Testaceous. Length 3-6 mm. Algeria and Tunisia deserts	<i>Sitiphus</i>
39 (37') -	Clypeus denticulate (figs 114, 122), angulate or rounded at sides; hind tibiae normally lengthened, moderately widened toward apex, their apical spurs moderately stout (fig. 124); tarsi normally elongate. Testaceous to blackish, elytra sometimes paler. Length 3-8 mm. Palearctic, Oriental, Afrotropical (?) and Nearctic (?) region	<i>Mendidius</i>
39' -	Clypeus with lateral supplementary denticles beyond the two ones at sides of median sinuosity	40
40 (39') -	Clypeus with one supplementary denticle at sides (figs 111, 117); middle tibiae with	

	one exceptionally elongate apical seta beyond the usual ones; hind tibiae elongate, apically moderately widened; hind femora feebly compressed (fig. 128). Pale testaceous; head, pronotum and elytral suture brownish. Length 4-7 mm. South- and Central-eastern Palearctic region	<i>Cnemargulus</i>
40' -	Clypeus with several supplementary denticles at sides (figs 110, 119); middle tibiae without elongate apical seta; hind tibiae distinctly broadened apically; hind femora strongly compressed. Pale or dark testaceous. Length 5-9 mm. Central-eastern Palearctic region	<i>Apsteiniella</i>
41 (33') -	Head cupuliform; epistome anteriorly with obtuse transverse carina; frontal suture, if present, not tuberculate; elytral interstices simple, without primary and secondary pseudinterstices; species glabrous, shiny, black or piceous	42
41' -	Not all of the above characters simultaneously present	43
42 (41) -	Clypeus quadridenticulate (fig. 135). Convex, rather shiny, glabrous; apterous. Blackish. Length 4-4.5 mm. Albania, Southern Spain, Spanish Morocco	<i>Ahermodontus</i>
42' -	Clypeus denticulate (fig. 134) or rounded at sides. Convex, shiny, glabrous; winged. Blackish or reddish. Length 3-10 mm. Palearctic, Oriental (?) and Southern Afrotropical region	<i>Ammonoecius</i>
43 (41') -	Seventh and ninth elytral interstices joined preapically and raised into a prominent oblique fold (fig. 136) or sixth and eighth elytral interstices joined preapically but not raised in oblique fold; fore tibiae, in males, never deformed	44
43' -	Seventh and ninth elytral interstices normally shaped; if joined preapically, striae are there no more strongly punctured or interstices are not carinate on disc	45
44 (43) -	Elytral interstices more or less strongly convex, seventh and ninth joined preapically and raised into prominent fold; striae fine on disc, more wide and strongly punctured apically (fig. 133). Oval-elongate, glabrous, shiny; piceous or blackish, sometimes elytra yellowish. Length 2.5-4 mm. Palearctic, Oriental and Afrotropical region	<i>Plagiogonus</i>
44' -	Elytral interstices distinctly carinate at middle, sixth and eighth joined preapically but not raised in prominent fold; striae very broad both on disc and at apex (fig. 137). Regularly oval, glabrous, shiny; brown-blackish. Length 4.5-6 mm. Eastern Palearctic and Oriental region	<i>Carinaulus</i>
45 (43') -	Elytral striae rather wide and not joined among them apically; elytral interstices more or less convex at apex but here not shortened	46
45' -	Elytral striae widened or not apically but, at least, the lateral ones, preapically joined among them; sometimes sixth, eighth and tenth shortened apically	51
46 (45) -	Elytral striae strongly deep, groove-shaped, without trace of punctures at bottom; pronotum strongly bisinuate basally (fig. 138). Sericeous; dark orange, median spot on epistome, elytra and tip of fore tibiae outer teeth blackish. Length 8-9 mm. Only one species from Zaire	<i>Sussorca</i>
46' -	Elytral striae always punctured, at least near base of elytra (if groove-shaped, the bottom is always punctured)	47
47 (46') -	Clypeal margin not ciliate; frontal suture not tuberculate in both sexes	48
47' -	Clypeal margin usually quite ciliate (if glabrous, the frontal suture tuberculate at least in males)	50
48 (47) -	Clypeus denticulate at sides; pronotum bordered at base. Shiny, glabrous; brown-	

	blackish, elytra brown reddish. Length 4 mm. Only one critical species from Ivory Coast (ex original diagnosis)	<i>Anomalurobius</i>
48' -	Clypeus rounded or angulose at sides	49
49 (48') -	Species convex, rather stout (fig. 140); inferior carina of fore tibiae denticulate; sexual dimorphism not very evident. Subshiny, glabrous; more or less dark testaceous. Length 5-7.5 mm. Afrotropical (?), Mexican Transition Zone, Oriental and Palearctic region	<i>Pharaphodius</i>
49' -	Species feebly convex, elongate; inferior carina of fore tibiae not denticulate; males with fore tibiae distinctly denticulate at middle of inner margin (fig. 141). Shiny, glabrous; blackish, elytra brown-yellowish. Length 4-5 mm. Eastern Palearctic region	<i>Coptochiroides</i>
50 (47') -	Base of pronotum not bordered; frontal suture tuberculate in males; females with epistome strongly gibbous; fore tibiae tridentate at outer margin, their apical spur normally shaped; middle tibiae inferior apical margin, in males, elongately, subacutely lobate (fig. 132). Shiny, glabrous; testaceous. Length 5.5-7 mm. Afrotropical region	<i>Nolicus</i>
50' -	Base of pronotum finely bordered; frontal suture not tuberculate in both sexes; fore tibiae bidentate at outer margin; their apical spur very elongate. Rather shiny, glabrous. Brown-yellowish. Length 6 mm. North-eastern Afrotropical region (ex original diagnosis)	<i>Arrowiellus</i>
51 (45') -	Pronotum distinctly bordered at front margin (sometimes border medially faint in large males with impression at middle of front margin)	52
51' -	Pronotum not bordered at front margin	60
52 (51) -	Basal margin of pronotum not bordered, at least at middle; medium size species (length 7-11 mm); males with anterior horn-shaped tubercle on epistome	53
52' -	Basal margin of pronotum quite bordered	54
53 (52) -	Genae rather elongately bristled; elytral striae rather wide, feebly crenulate, the margin of interstices finely bordered laterally; males fore pronotal impression limited posteriorly by a median, bifid at tip, rather strong gibbosity (fig. 143). Brown-reddish, sometimes elytra paler. Length 7.5-11 mm. Afrotropical region	<i>Hemicyclium</i>
53' -	Genae shortly bristled; elytral striae fine, distinctly crenulate; males fore pronotal impression limited posteriorly by a horn-shaped median gibbosity (fig. 144) (gibbosity feeble in small males). Dark brown-reddish; elytra sometimes pale brown-reddish or pale brown-yellowish. Length 7.5-11.5 mm. Afrotropical region	<i>Craterocyphus</i>
54 (52') -	Large species (length 16-18 mm); clypeus quite densely bristled; pronotum, in males, deeply foveolate and with basal longitudinal median groove surrounded by two distinct transversal gibbosities (fig. 145); elytral striae with superficial punctures close one another; apical margin of middle and hind tibiae strongly sinuate. Pale brownish. Afrotropical region	<i>Exaphodius</i>
54' -	Not all of the above characters simultaneously present	55
55 (54') -	Frontal suture not tuberculate at middle	56
55' -	Frontal suture tuberculate, at least at middle	57
56 (55) -	Clypeus sinuate at middle; lateral margins of pronotum sparsely bristled, hind angles distinct (fig. 146). More or less dark brownish. Length 5-7 mm. South-Western Palearctic region	<i>Anomius</i>
56' -	Clypeus not sinuate at middle; lateral margins of pronotum densely, elongately	

	bristled, hind angles widely rounded (fig. 147). Shiny chestnut-brown. Length 9-14 mm. Southern Australian region	<i>Acrossoides</i>
57 (55') -	Epistome anteriorly without transverse carina	58
57' -	Epistome anteriorly with strong transverse carina	59
58 (57) -	Species stout, relatively larger (length 10-15 mm); elytra flattened on disc and with strong preapical gibbosity (fig. 148). Head and pronotum blackish, normally latter reddish spotted at sides; elytra, usually, and abdomen pale red. Western Palearctic region	<i>Coprimorphus</i>
58' -	Species elongate, relatively smaller (length 5-12 mm); elytra regularly convex on disc and without preapical gibbosity (fig. 149). Testaceous, pronotum disc with cordiform brownish spot; sometimes quite brownish or piceous. Palearctic, Oriental and Afrotropical region	<i>Alocoderus</i>
59 (57') -	Scutellum with a median longitudinal carina; elytral interstices wide, simple at apex; males with strong transverse carinae on outer face of hind tibiae and with median impression at front margin of pronotum (fig. 150). Shining blackish, sometimes elytra reddish. Length 5-6 mm. Palearctic region	<i>Loraspis</i>
59' -	Scutellum flat; elytral interstices narrower, strongly convex and sharply bordered apically; males hind tibiae widely flattened, apically spatuliform, their transverse carinae on outer face very short (fig. 159) and pronotum without median impression anteriorly (fig. 151). Piceous. Length 4-4.5 mm. Southern Afrotropical region	<i>Pseudagoliinus</i>
60 (51') -	Lateral margins of pronotum more or less deeply inward sinuate toward base, hind angles dentiform (fig. 152) or, at least, right; eyes small; upperside glabrous. Blackish or brown-reddish. Length 7-8 mm. South-Western Nearctic region and Mexican Transition Zone	<i>Coelotrachelus</i>
60'-	Lateral margins of pronotum sometimes sinuate before hind angles but latter only obtusely rounded or truncate	61
61 (60') -	Scutellum pentagonal with sides parallel (fig. 9) or convergent (fig. 10) toward base, amygdaliform (fig. 13) or cordiform (fig. 14)	62
61' -	Scutellum triangular with sides straight, equilateral (fig. 7) or isosceles (fig. 8), or curved, widely (fig. 11) or narrowly (fig. 12) ogival ¹⁵	96
62 (61) -	Hind tibiae apically fimbriate with equal more or less short spinules (fig. 18) . . .	63
62' -	Hind tibiae apically fimbriate with spinules irregularly (fig. 15), alternately (fig. 16) or progressively (fig. 17) unequal (in latter case the more elongate spinules placed toward outer and inner apex of margin)	70
63 (62) -	Basal margin of pronotum bordered, sometimes border extremely fine (<i>Liothorax</i>)	64
63' -	Basal margin of pronotum not bordered	69
64 (63) -	Frontal suture tuberculate, at least with one median tubercle	65
64' -	Frontal suture not at all tuberculate	68
65 (64) -	Clypeus quadridenticulate, densely bristled at sides (fig. 153). Blackish or piceous; sometimes elytra yellowish spotted. Length 5-7.5 mm. Nearctic, Neotropical and Afrotropical (?) region	<i>Tetraclipeoides</i>
65' -	Clypeus bidenticulate or rounded at sides; latter not bristled	66

¹⁵ In *Mendidaphodius*, the scutellum is very narrowly elongate and with curved sides (i.e. narrowly ogival) or subpentagonal or, at least, pentagonal.

66 (65') -	Clypeus narrowly sinuate and inward angulate at middle; frontal suture with a conical median tubercle; genae rounded, distinctly more protruding than eyes (fig. 154). Blackish, elytra with large, elongate discal spot orange. Length 2.5-4 mm. Central Asia	<i>Turanella</i>
66' -	Clypeus more or less widely sinuate and inward normally curved at middle	67
67 (66') -	Aedeagus without membranous processes at apex of paramera (fig. 160); epistome, in both sexes, anteriorly coarsely, sometimes subrugosely, punctured; hind tibiae superior apical spur longer than first tarsal segment; latter shorter than following two combined. Quite blackish; sometimes elytra more or less widely reddish; rarely quite reddish. Length 4-6 mm. Subcosmopolitan	<i>Calamosternus</i>
67' -	Aedeagus with large membranous processes at apex of paramera (fig. 161); epistome anteriorly finely punctured, at least in males; hind tibiae superior apical spur as long as or shorter than first tarsal segment; latter longer than following two combined. Head and pronotum blackish, elytra yellowish with brownish juxtasutural interstice (fig. 162). Length 4.5-6 mm. Palearctic region	<i>Pseudesymus</i>
68 (64') -	Hind angles of pronotum distinctly truncate; shoulder strongly denticulate (x50) (fig. 164). Brown-blackish; head and pronotum more or less widely reddish. Length 3.5-4.5 mm. Oriental region	<i>Siamaphodius</i>
68' -	Hind angles of pronotum obtusely rounded; shoulder not or feebly denticulate. Blackish; rarely with reddish spotted or quite yellowish elytra. Length 4-6 mm. Palearctic, Oriental and Nearctic region	<i>Liothorax</i>
69 (63') -	Elytra dirty yellowish, usually with a discal brownish spot more or less distinct (fig. 163); head and pronotal disc more or less darkened. Length 3-7 mm. Subcosmopolitan	<i>Labarrus</i>
69' -	Elytra concolorous, brown-reddish or black. Head and pronotum blackish. Length 3.5-5.5 mm. Southern Nearctic, Northern Neotropical and Afrotropical region; Madagascar	<i>Nialaphodius</i>
70 (62') -	Basal margin of pronotum distinctly bordered	71
70' -	Basal margin of pronotum not bordered or, at least, border widely interrupted at middle	85
71 (70) -	Upperside distinctly quite pubescent (fig. 155). Blackish or dark-brownish; sometimes elytra reddish or yellowish. Length 3-5 mm. Holarctic, Oriental and Afrotropical (?) region	<i>Trichonotulus</i>
71' -	Head and pronotum glabrous; sometimes elytra shortly quite pubescent or apically pubescent only	72
72 (71') -	Clypeus angulate (fig. 156) or bidenticulate at sides (fig. 158)	73
72' -	Clypeus rounded at sides	75
73 (72) -	Middle and hind tibiae with a sole extremely elongate apical spinula among progressively unequal others, near angle of upper apical margin (fig. 126); clypeus more or less distinctly angulate at sides; frontal suture with a conical median tubercle (fig. 142). Reddish-testaceous; lateral pronotal spots and elytral suture brownish. Length 3-5 mm. South-western Palearctic region	<i>Nialosternus</i>
73' -	Middle and hind tibiae normally fimbriate with irregularly elongate apical spinules	74
74 (73') -	Hind angles of pronotum quite rounded (fig. 158). Head and pronotum piceous; elytra reddish. Length 5-7 mm. South-eastern and Central Palearctic region . .	<i>Orodaliscus</i>

74' -	Hind angles of pronotum obtuse or truncate. Blackish; rarely quite testaceous; sometimes elytra more or less widely yellowish with blackish suture. Length. 2-4 mm. Palearctic region	<i>Mecynodes</i>
75 (72') -	Frontal suture at least with a median tubercle	76
75' -	Frontal suture not at all tuberculate	77
76 (75) -	Hind angles of pronotum obtusely rounded; genae rounded, not more protruding than eyes; first stria of elytra widened and strongly impressed from preapical declivity up to apex (fig. 171). Blackish; head and pronotum laterally yellowish; elytra dirty yellow with brown-blackish spots. Length 4-5 mm. Palearctic region	<i>Volinus</i>
76' -	Hind angles of pronotum truncate and feebly sinuate inward (fig. 157); genae obtusely angulate, strongly more protruding than eyes; first stria of elytra as wide apically as on disc. Blackish or brownish; elytra yellowish, blackish spotted, rarely quite yellowish. Length 4-6 mm. Holarctic region	<i>Phaeaphodius</i>
77 (75') -	Clypeus not sinuate at middle, bristled; elytra regularly oval, sometimes distinctly broadened posteriorly (fig. 166). Brownish or yellowish, head, pronotum and elytra darkened. Length 4-5.5 mm. Afrotropical and Oriental region	<i>Aphodobius</i>
77' -	Clypeus distinctly sinuate at middle	78
78 (77') -	Clypeus rather quite, or at least laterally, elongately bristled	79
78' -	Clypeus not bristled, at most faintly bristled laterally only (x50)	80
79 (78) -	Hind tarsi as long as or shorter than tibiae; species stout and relatively smaller (length 2.5-4 mm) (fig. 167). Quite brown-blackish or brown-yellowish; sometimes elytra yellowish with scutellar blackish spot. Afrotropical and Oriental region	<i>Mesontoplatys</i>
79' -	Hind tarsi longer than tibiae; species elongate, cylindrical and relatively larger (length 5-8 mm) (fig. 174). Quite pale testaceous or ferrugineous. Southern Palearctic region	<i>Erytus</i>
80 (78') -	Elytral interstices tectiform at middle; striae more or less distinctly bordered at each side (fig. 172). Dark brownish; lateral margins of pronotum paler. Length 3-5 mm. Afrotropical, Oriental and Palearctic (?) region	<i>Pleuraphodius</i>
80' -	Elytral interstices flat or convex, never tectiform at middle; striae not bordered at each side	81
81 (80') -	First segment of hind tarsi short, plumped, shorter than superior apical spur of hind tibia; latter, in males, widened into curved blade (fig. 168). Blackish; sometimes elytra reddish or yellowish spotted; seldom elytra quite reddish or yellowish. Length 4-5 mm. Palearctic region	<i>Euorodalus</i>
81' -	First segment of hind tarsi normally shaped	82
82 (81') -	First elytral stria as wide and strongly impressed apically as near scutellum	83
82' -	First elytral stria apically wider and more strongly impressed than near scutellum . .	84
83 (82) -	Species elongate (fig. 175); elytral striae fine; discal punctation of pronotum very fine, simple; clypeal margin not bristled; sexual dimorphism accentuate in males by shape of fore tibia and of first segment of hind tarsi. Shiny brown-reddish. Length 4.5-6 mm. Afrotropical region	<i>Doaphius</i>
83' -	Species stout; elytral striae rather wide; discal punctation of pronotum coarse, dense; clypeus very shortly bristled; sexual dimorphism nearly faint. Quite brown-reddish or dark brownish. Length 4-6 mm. Afrotropical and Oriental region . .	<i>Koshantschikovius</i>

84 (82') -	Elytral striae relatively larger; interstices convex; fore tibiae apical spur, in males, normally acuminate toward apex. Aedeagus with short paramera, abruptly downward curved. Blackish or brownish; sometimes elytra reddish spotted or quite yellowish with blackish suture. Length 3-5 mm. Palearctic region	<i>Esymus</i>
84' -	Elytral striae relatively finer; interstices flat; fore tibiae apical spur, in males, hooked apically (fig. 169) or claviform (fig. 170). Aedeagus with paramera short, widened and membranous apically. Blackish; elytra either with more or less widened reddish spots (fig. 173) and rarely quite reddish or blackish, or yellowish with or without blackish spots. Length 2.5-4 mm. Palearctic region	<i>Phalacronothus</i>
85 (70') -	Elytral interstices sharply carinate at middle or strongly convex on disc and carinate apically; striae more or less distinctly bordered	86
85' -	Elytral interstices neither sharply carinate nor strongly convex on disc, sometimes distinctly convex apically only; striae not bordered	87
86 (85) -	Elytral interstices strongly convex on disc and carinate apically, fourth, sixth, eighth and tenth shortened, not reaching elytral apex; shoulder not denticulate; hind angles of pronotum feebly truncate (fig. 177). Brown-blackish. Length 5-6.5 mm. Afrotropical region	<i>Aphodoharmogaster</i>
86' -	Elytral interstices with shiny and sharp central carina becoming faint on preapical declivity only; shoulder obtusely denticulate; hind angles of pronotum truncate (fig. 176). Dark brownish. Length 5.5-6.5 mm. Afrotropical region	<i>Podotenoides</i>
87 (85') -	Sides of pronotum distinctly sinuate before hind angles; latter more or less strongly acuminate; humeral denticle strong. Species rather stout, subparallel-sided; elytra rather short (fig. 178). Brown-reddish or brown-blackish; sometimes elytra paler with dark scutellar spot. Length 2.5-4 mm. Afrotropical, Palearctic and Oriental region	<i>Paradidactylia</i>
87' -	Sides of pronotum not or faintly sinuate before hind angles; latter rounded or truncate (if pronotal sides sinuate, humeral tooth lacking [x50])	88
88 (87') -	Clypeus entirely bristled	89
88' -	Clypeus not bristled	92
89 (88) -	Clypeus angulate at each side of central sinuosity; bristles of clypeal margin rather sparse, particularly short and scarce laterally (fig. 165). Blackish; sometimes elytra reddish spotted basally, seldom nearly quite reddish. Length 4-6 mm. Palearctic and Afrotropical (?) region	<i>Nialus</i>
89' -	Clypeus widely rounded at sides	90
90 (89') -	Brown-blackish or brown-reddish concolorous species; bristles of clypeal margin short and sparse (fig. 179); elytral interstices convex at apex; upper side of fore tibiae densely coarsely punctured. Length 2.5-5 mm. Afrotropical region, Madagascar	<i>Pseudopharaphodius</i>
90' -	Head and pronotum dark brownish, elytra yellow-brownish with or without blackish spots; bristles of clypeal margin distinct, dense; elytral interstices feebly convex apically	91
91 (90') -	Frontal suture not at all tuberculate (fig. 184). Yellowish; epistome, pronotum disc and two elongate strips on elytra blackish. Length 5-6 mm. South-eastern Palearctic, Afrotropical and Southern Oriental region	<i>Neocalaphodius</i>
91' -	Frontal suture distinctly tuberculate at middle (fig. 182). Piceous; elytra yellowish without blackish spots. Length 6-8 mm. Afrotropical region	<i>Basilewskyanus</i>

- 92 (88') - Clypeus denticulate at sides; epistome with short transverse anterior carina (fig. 185). Blackish, elytra faintly reddish apically. Length 3.5-5 mm. Eastern Palearctic region
..... *Lindbergianus*
- 92' - Clypeus rounded at sides 93
- 93 (92') - First segment of hind tarsi shorter than superior apical spur of tibia; pronotum thickly bordered at sides (fig. 181). Piceous or brown-reddish. Length 4-6.5 mm. Palearctic and Oriental region *Paulianellus*
- 93' - First segment of hind tarsi as long as or longer than superior apical spur of tibia .. 94
- 94 (93') - Basal margin of pronotum distinctly bilobate; genae quite rounded, not more protruding than eyes; scutellum cordiform (fig. 186). Shiny blackish; elytra dark reddish, sometimes with subapical cordiform blackish spot. Length 5-9 mm. Palearctic region *Biralus*
- 94' - Basal margin of pronotum not bilobate; genae rounded but rather distinctly more protruding than eyes 95
- 95 (94') - Hind tibiae apically fimbriate with spinules elongate and alternately unequal (fig. 16); eyes large; frontal suture not at all tuberculate (fig. 180). More or less pale testaceous. Length 2.5-3.5 mm. Neotropical, Afrotropical (?) and Oriental (?) region
..... *Blackburneus*
- 95' - Hind tibiae apically fimbriate with spinules elongate and progressively unequal (fig. 17); eyes of medium size; frontal suture with median tubercle more or less distinct (fig. 183). Brown-reddish or testaceous. Length 3-4 mm. Palearctic and Afrotropical region *Subrinus*
- 96 (61') - Species stout, short and convex; genae acute or rounded but strongly auriculate (except in *joannae*); pronotal punctation uniform, double, dense also on disc; elytral striae wide (fig. 187). Blackish or piceous; sometimes elytra reddish or yellowish. Length 4-5 mm. Eastern Palearctic and Oriental region *Loboparius*
- 96' - Not all of the above characters simultaneously present 97
- 97 (96') - Hind tibiae apically fimbriate with more or less elongate and irregularly, progressively or alternately unequal spinules 98
- 97' - Hind tibiae fimbriate with more or less short and equal apical spinules¹⁶ 156
- 98 (97) - Base of pronotum bordered 99
- 98' - Base of pronotum not bordered or border more or less widely interrupted at middle .
..... 127
- 99 (98) - Preapical declivity of elytra distinctly gibbous 100
- 99' - Preapical declivity of elytra not gibbous 102
- 100 (99) - Lateral margins of pronotum elongately quite bristled; hind tarsi somewhat longer than tibiae (fig. 193); males fore tibiae very slender; their outer distal teeth rather small (fig. 189). Blackish; elytra testaceous with cloudy large discal spot brownish; seldom quite yellowish. Length 7-12 mm. Neotropical region (Andes) *Paranimbus*
- 100' - Lateral margins of pronotum bristled toward front angles only or nearly glabrous .. 101
- 101 (100') - Epistome nearly flat; shape rather depressed; hind angles of pronotum acute (fig. 192); elytral striae fine and superficial; fore tibiae, in males, distally bidentate at outer margin (fig. 190) and mesotibiae inferior apical spur regularly acuminate toward

¹⁶ In *Longaphodius* the apical margin of middle and hind tibiae is distinctly serrulate and this might simulate apical spinules alternately unequal.

	apex. Blackish; abdomen pale reddish. Length 8-11 mm. Neotropical region	
		<i>Pseudopodotenus</i>
101' -	Epistome strongly gibbous with trace of transverse anterior carina; shape convex; hind angles of pronotum rounded (fig. 194); elytral striae deep and more or less wide; fore tibiae, in males, distally tridentate at outer margin (fig. 191) and mesotibiae inferior apical spur strongly shortened, apically truncate. Piceous; distal margins paler. Length 8-10 mm. Eastern Palearctic and Oriental region	<i>Platyderides</i>
102 (99') -	Lateral margins of pronotum elongately quite ciliate; epistome glabrous	103
102' -	Lateral margins of pronotum not ciliate ¹⁷ ; if ciliate, epistome, at least anteriorly and laterally, with large setigerous punctures (<i>Nimbus</i>)	105
103 (102) -	Clypeus denticulate at sides; its lateral margins as well as those of pronotum and epipleura densely elongately bristled (fig. 196); fore tibiae apical spur, in males, extremely reduced, hidden from above (fig. 188). More or less dark chestnut-brown. Length 6-7 mm. Western Nearctic region	<i>Cinacanthus</i>
103' -	Clypeus not denticulate at sides	104
104 (103') -	Clypeal lateral margins bristled; fore tibiae, in males, distally tridentate at outer margin, abruptly widened at apex of inner margin (fig. 197). Blackish; elytra brown-yellowish. Length 3-6 mm. Nearctic and Australian (?) region	<i>Drepanocanthoides</i>
104' -	Clypeal lateral margins glabrous; fore tibiae, in males, quadridentate at outer margin, not apically widened at inner margin (fig. 195). Piceous or brown-reddish; elytra with or without cloudy discal spot darker. Length 5-7 mm. Neotropical region	
		<i>Orodaliscoides</i>
105 (102') -	Elytra denticulate at shoulder (x50)	106
105' -	Elytra not or very feebly denticulate at shoulder (x50)	109
106 (105) -	Pronotum with distinct groove before basal margin, the groove strongly punctured (figs 198, 199)	107
106' -	Pronotum not grooved before basal margin	108
107 (106) -	Head abnormally large; lateral margins of pronotum nearly straight, not sinuate before hind angles (fig. 198). Blackish. Length 3-4 mm. Northern Nearctic region	
		<i>Dialytellus</i>
107' -	Head normally sized; lateral margins of pronotum more or less strongly sinuate before hind angles (fig. 199). Blackish; sometimes elytra more or less widely reddish or yellowish. Length 4-5 mm. Palearctic and Oriental region	<i>Aparammoecius</i>
108 (106') -	Clypeus rounded at sides; epistome feebly convex; shape rather depressed (fig. 201). Quite dirty yellowish or brownish. Length 5-6.5 mm. Palearctic region	
		<i>Acanthobodilus</i>
108' -	Clypeus angulate or subdenticulate at sides; epistome abruptly bent downward; shape strongly convex (fig. 200). Quite blackish; seldom elytra reddish. Length 4-5 mm. Palearctic region	<i>Parammoecius</i>
109 (105') -	Elytra yellowish with several small blackish spots or with blackish longitudinal strips	110
109' -	Elytra differently coloured	111
110 (109) -	Epistome anteriorly and laterally with more or less straight setae; elytra glabrous or pubescent; frontal suture usually mutic (fig. 212). Aeneo-blackish; head distally,	

¹⁷ Cilia at most visible from above are infeudate on propleura.

- pronotum sides and elytra yellowish, latter cloudy blackish spotted. Length 4-8 mm. Palearctic region *Nimbus*
- 110' - Epistome and elytra glabrous; sometimes latter shortly finely pubescent on apical declivity only; frontal suture trituberculate. Blackish or brownish; pronotum often yellowish at sides, elytra yellow or testaceous with several small blackish spots (fig. 213). Length 3-8 mm. Holarctic, Oriental, Neotropical (?) and Afrotropical (?) region *Chilo thorax*
- 111 (109') - Head, pronotum and elytra shortly but distinctly quite pubescent; frontal suture with distinct median tubercle (fig. 203); elytral interstices subrugosely punctured. Brownish. Length about 5 mm. Japan *Nipponaphodius*
- 111' - Not all of the above characters simultaneously present 112
- 112 (111') - Elytra quite glabrous (x50) 113
- 112' - Elytra more or less distinctly pubescent at least on sides or apically (x50) 119
- 113 (112) - Hind angles of pronotum distinctly, obliquely truncate; clypeus obtusely angulate at sides (fig. 216). Piceous or blackish; sometimes elytra reddish. Length 5-6 mm. Palearctic region *Loraphodius*
- 113' - Hind angles of pronotum obtusely rounded 114
- 114 (113') - Epistome rugosely punctured; clypeus denticulate or strongly angulate at sides; middle and hind tibiae apically fimbriate with spinules irregularly unequal (fig. 208)¹⁸. Elytra yellowish, reddish or blackish. Length 3-5 mm. Palearctic, Nearctic (?) and Afrotropical region *Mendidaphodius*
- 114' - Epistome simply punctured; clypeus rounded, seldom obtusely angulate at sides 115
- 115 (114') - Elytral striae very fine up to apex; discal punctation of pronotum and of elytral interstices very fine, nearly faint (x50) (fig. 202). Dark brownish. Length 7-8 mm. Eastern Palearctic and Afrotropical (?) region *Aphodiellus*
- 115' - Elytral striae more or less fine but usually widened and deeper apically; discal punctation of pronotum always distinct (x50) 116
- 116 (115') - Inferior carina of fore tibiae with an acute denticle at basal third level (fig. 206) 117
- 116' - Inferior carina of fore tibiae mutic (fig. 207) 118
- 117 (116) - Clypeus widely rounded at sides; middle tarsi shorter than tibiae (fig. 205). Blackish or brownish; elytra reddish or yellowish with more or less wide discal spot blackish. Length 3-5 mm. Palearctic region *Nobius*
- 117' - Clypeus obtusely angulate at sides; middle tarsi longer than tibiae (fig. 204); (males unknown). Dark brown-reddish. Length 5.5 mm. India *Erytodes*
- 118 (116') - Clypeal lateral margins densely and rather elongately bristled (fig. 214); fore tibiae apical spur, in males, normally shaped. Piceous or blackish. Length 6-7.5 mm. Nearctic region, Mexican Transition Zone *Pseudagolius*
- 118' - Clypeal lateral margins glabrous (fig. 215); fore tibiae apical spur, in males, claviform. Blackish; fore angles of pronotum and elytra with bright orange spots. Length 3-5 mm. Palearctic region *Eudolus*
- 119 (112') - Genae shortly bristled (fig. 210); pygidium apical margin with several elongate setae.

¹⁸ In facts, the type species of *Mendidaphodius*, i.e. *spinifrontis* (Reitter, 1901), quite fits this character but other taxa doubtless pertaining to this genus have hind tibiae apically fimbriate with short and equal spinules; this is a typical case of a character usually considered of generic value that has to be downgraded to specific value. Anyway, the peculiar habitus of all *Mendidaphodius* taxa allows the correct generic attribution to everybody.

	Brownish; elytra testaceous darkened apically. Length 4-5 mm. Oriental region	
		<i>Gilletianus</i>
119' -	Genae elongately bristled	120
120 (119') -	Aedeagus digitiform (fig. 222)	121
120' -	Aedeagus differently shaped	122
121 (120) -	Genae quite rounded, feebly more protruding than eyes (figs 217, 219); sexual dimorphism accentuate: in males, clypeus more or less strongly sinuate at middle and apical spur of fore tibiae inserted at middle of inner margin (fig. 218). Blackish; elytra yellowish with brownish suture or blackish with wide humeral spot and apex reddish. Length 6-8 mm. Central Asia	<i>Lunaphodius</i>
121' -	Genae obtusely angulate, distinctly more protruding than eyes (fig. 221); sexual dimorphism relatively feeble: in males, clypeus feebly sinuate at middle as in females, apical spur of fore tibiae inserted at inner margin at level of second outer distal tooth. Reddish testaceous or piceous; sides of pronotum and elytra testaceous or yellowish, sometimes latter with large cloudy discal spot brownish. Length 5-12 mm. Palearctic, Afrotropical and Nearctic (?) region	<i>Bodilus</i> (<i>partim: lugens</i> group)
122 (120') -	Elytra dirty yellowish, usually with wide cloudy discal spot, rarely quite brown-blackish; striae wide and distinctly crenulate (fig. 211). Blackish; sometimes clypeal margin and pronotum sides yellowish; elytra yellowish with brownish cloudy discal spot, seldom quite blackish. Length 4-8 mm. Holarctic region	<i>Melinopterus</i>
122' -	Elytra concolorous, reddish or blackish; seldom yellowish with or without several cloudy blackish spots	123
123 (122') -	Genae rounded, not more protruding than eyes (figs 225, 226)	124
123' -	Genae angulate, distinctly more protruding than eyes (figs 227, 228)	125
124 (123) -	Elytral interstices more or less diffusedly (fig. 226) or quite pubescent, irregularly and coarsely punctured. Blackish; sometimes elytra reddish. Length 5-6.5 mm. Palearctic region	<i>Pubinus</i>
124' -	Elytral interstices much shortly pubescent apically only and with a shiny thin border at each side, their punctation vermiculate (fig. 225). Blackish; elytra dark reddish. Length 4-6 mm. Palearctic region	<i>Sigorus</i>
125 (123') -	Elytral interstices coarsely irregularly punctured; punctation sometimes somewhat confluent; frontal suture not or faintly tuberculate (fig. 227); inferior apical spur of middle tibiae regularly acuminate toward apex in both sexes; aedeagus with paramera widely membranous apically (fig. 224). Blackish; sometimes elytra brownish, reddish or seldom yellowish. Length 4-8 mm. Palearctic region	<i>Amidorus</i>
125' -	Elytral interstices neither coarsely nor confluent punctured; frontal suture more or less distinctly tuberculate; middle tibiae inferior apical spur, in males, shortened and apically truncate	126
126 (125') -	Elytral interstices more or less finely regularly punctured; sexual dimorphism shown in males by middle tibiae inferior apical spur shortened and apically truncate (fig. 220); aedeagus with paramera relatively normally shaped and without apical membranes (fig. 223). Blackish; elytra piceous, brownish, reddish or yellowish with cloudy blackish spots. Length 5-8 mm. Palearctic region	<i>Pseudacrossus</i>
126' -	Elytral interstices microscopically sparsely and irregularly punctured; sexual dimorphism exceptionally accentuate in males by mesotibiae ventromedially with brush of dense, short and thick setae, their inferior apical spur truncate and strongly	

	inward bent apically (figs 209, 288); aedeagus with extraordinarily broad membranes at apex of paramera (figs 293-294). More or less dark brownish; sometimes clypeal margin, front angles of pronotum and elytral suture paler. Length 5.5-7.5 mm. China (Qinghai prov.)	<i>Qingaphodius</i>
127 (98') -	Odd elytral interstices with small pubescent rough tubercles irregularly scattered (fig. 233); fore tibiae, in males, distally bidentate at outer margin (fig. 234), normally tridentate in females (fig. 235). Testaceous, piceous or blackish; sometimes elytra yellowish with several cloudy darker spots. Length 4-7 mm. Australian and Neotropical region	<i>Podotenus</i>
127' -	Elytral interstices without tubercles	128
128 (127') -	Fore tibiae short, widened apically and with the two outer distal teeth inferiorly joined (fig. 231); elytra three times longer than pronotum (fig. 232); (males unknown). Dirty testaceous. Length 6-8 mm. Chile	<i>Symphodon</i>
128' -	Fore tibiae relatively slender and tridentate at outer margin in both sexes	129
129 (128') -	Pronotum more or less widely flattened at sides, with feeble impressions near front and hind angles; clypeus truncate or faintly sinuate at middle, elongately ciliate laterally (fig. 229); sexual dimorphism usually accentuate in males by shape of inferior apical spur of middle tibiae, of middle tarsi segments and of their claws (fig. 230). Blackish or testaceous; elytra usually paler. Length 5-10 mm. Nearctic and Neotropical region	<i>Cephalocyclus</i>
129' -	Pronotum not flattened at sides; clypeal border glabrous or faintly bristled	130
130 (129') -	Elytral interstices with rows of straight setae infeudate on coarse punctures aligned near striae; clypeal margin quite shortly bristled; lateral margins of pronotum bristled or not; pygidium often with strongly elongate setae visible from above (fig. 236). Piceous or brownish; elytra concolorous or with cloudy yellowish or reddish discal spots more or less widened. Length 3-6 mm. Afrotropical, Australian, Oriental and Palearctic region	<i>Aganocrossus</i>
130' -	Elytral pubescence, if existing, recumbent and relatively shorter	131
131 (130') -	Hind angles of pronotum distinctly truncate and inwardly sinuate	132
131' -	Hind angles of pronotum obtusely rounded	136
132 (131) -	Species distinctly pubescent	133
132' -	Species glabrous (x50)	134
133 (132) -	Species relatively stouter and shorter (length 5-6 mm); pygidium exposed (fig. 237). Dirty yellowish; head and pronotum more or less widely reddish at sides. Thailand, Philippines, China (Yunnan), Java	<i>Sinaphodius</i>
133' -	Species relatively more elongate (length 6-9 mm), oval; pygidium not exposed (fig. 240); fore tibiae, in males, slender, strongly elongate, their apical spur shortened (fig. 238); fore tibiae normally shaped in females (fig. 239). Brownish piceous. Palearctic, Oriental and Afrotropical region	<i>Brachiaphodius</i>
134 (132') -	Shoulder not denticulate; superior apical spur of hind tibiae longer than first tarsal segment; fore tibiae apical spur, in males, strongly elongate and apically hooked (fig. 241). Shiny black. Length 5.5-7 mm. Eastern Palearctic region	<i>Gonaphodius</i>
134' -	Shoulder always more or less strongly denticulate; superior apical spur of hind tibiae shorter than first tarsal segment	135
135 (134') -	Elytra strongly oval; sexual dimorphism accentuate: fore tibiae, in males, always	

	widened at inner margin and with apical spur strongly curved outward (fig. 242). Blackish or more or less pale brownish. Length 3-5 mm. Afrotropical region	
		<i>Aphodiopsis</i>
135' -	Elytra normally oval-elongate (fig. 243); sexual dimorphism feeble. Brownish; elytra with or without paler spots. Length 3.5-6 mm. Nearctic and Neotropical region	
		<i>Gonaphodiellus</i>
136 (131') -	Frontal suture trituberculate or, at least, with a median tubercle	137
136' -	Frontal suture not at all tuberculate, at most transversely raised laterally only . .	138
137 (136) -	Shoulder with small but distinct denticle; clypeus rounded at sides (fig. 244); inferior apical spur of middle tibiae, in males, apically truncate. Blackish; elytra often reddish, seldom blackish spotted. Length 5-6 mm. Palearctic region	<i>Oromus</i>
137' -	Shoulder not at all denticulate; clypeus angulate at sides (fig. 245); inferior apical spur of middle tibiae, in males, regularly acuminate apically. Blackish; elytra reddish with or without several blackish spots. Length 4-6 mm. Palearctic region . .	<i>Limarus</i>
138 (136') -	Shoulder more or less strongly denticulate	139
138' -	Shoulder not denticulate (sometimes more or less distinctly denticulate in certain <i>Acrossus</i> species but, in this case, head wide, clypeus semicircular and eyes small) .	
		142
139 (138) -	Elytral interstices distinctly convex or nearly cariniform apically, fifth and seventh apically joined each other and more or less raised in distinct fold (fig. 246). More or less pale brownish; sometimes elytra with yellowish humeral and preapical spots. Length 3.5-4 mm. Madagascar	<i>Neoemadiellus</i>
139' -	Elytral interstices feebly convex apically	140
140 (139') -	Genae strongly more protruding than eyes; elytra quite pubescent; interstices strongly microreticulate so rather dull; epistome and pronotum densely punctured (fig. 247). Blackish. Length 5-7.5 mm. China	<i>Boucomontiellus</i>
140' -	Genae rounded, not more protruding than eyes; elytra glabrous or more or less diffusedly but never quite pubescent	141
141 (140') -	Elytra glabrous. Brown-blackish; usually with reddish spotted elytra (fig. 248). Length 4.5-6 mm. Oriental and Afrotropical (?) region	<i>Emadiellus</i>
141' -	Elytra pubescent toward apex (fig. 249). Brown-reddish; sometimes elytra with paler spots. Length 4-6 mm. Afrotropical region	<i>Neoheptaulacus</i>
142 (138') -	Pronotum lateral margins elongately ciliate	143
142' -	Pronotum lateral margins glabrous, at most very shortly bristled	146
143 (142) -	Elytra yellow-brownish with small cloudy blackish spots	144
143' -	Elytra differently coloured	145
144 (143) -	Epistome finely punctured; frontal suture not tuberculate; hind angles of pronotum distinct, obtusely rounded (fig. 250). Blackish; sides of pronotum and elytra yellowish, latter with several cloudy blackish spots. Length 3.5-9 mm. Palearctic region	<i>Aphodaulacus</i> (<i>partim: turkestanicus</i> group)
144' -	Epistome coarsely punctured; frontal suture with two lateral gibbosities (fig. 251). Brown- or red-yellowish; sometimes elytra with darker discal spots. Length 6.5-7.5 mm. Southern Australian region	<i>Candezeollus</i>
145 (143') -	Pronotum lateral margins with bristles nearly perpendicularly straight; front, in males, with median tubercle bifid at tip (fig. 254); frontal suture distinct, somewhat raised	

	laterally. Quite blackish to various shades of brown. Length 9-15 mm. Australian region	<i>Acrossidius</i>
145' -	Pronotum lateral margins with bristles backward curved (fig. 252). Brown-yellowish. Length 4-4.5 mm. Southern Afrotropical region	<i>Youngaphodius</i>
146 (142') -	Elytra distinctly pubescent, at least shortly pubescent on sides	147
146' -	Elytra glabrous	152
147 (146) -	Head large; clypeus nearly semicircular; genae acute or rightly angulate; eyes small	148
147' -	Not all of the above characters simultaneously present	149
148 (147) -	Scutellum sunk at middle, narrower or as wide as two first elytral interstices at base; fore tibiae, in males, apically broadened at inner margin (fig. 253). Piceous; sides of pronotum and elytra more or less widely yellowish. Length 5-10 mm. South-eastern Palearctic region	<i>Paracrossidius</i>
148' -	Scutellum flat, wider than two first interstices at base; fore tibiae, in males, not apically widened at inner margin (fig. 255). Blackish or piceous, seldom quite testaceous; sometimes elytra reddish or yellowish with or without blackish spots or stripes. Length 5-16 mm. Holarctic, Oriental and Afrotropical (?) region	<i>Acrossus</i> (partim: <i>luridus</i> group)
149 (147') -	Elytra concolorous, dirty yellowish or brown-reddish, with several blackish spots; inferior apical spur of middle tibiae, in males, apically hooked; first segment of hind tarsi as long as or shorter than following three combined; genae elongately bristled; epipharynx with six spiculae at apex of corypha	150
149' -	Elytra brown-yellowish with a small preapical spot paler placed after a dark lunula (but in this case the sutural margin is darker); inferior apical spur of middle tibiae, in males, regularly acuminate apically; first segment of hind tarsi as long as or longer than following three combined; epipharynx with two spiculae at apex of corypha	151
150 (149) -	Upper side elongately densely pubescent, sometimes more finely pubescent in females; pubescence recumbent; hind angles of pronotum distinct, obtusely rounded (fig. 250). Blackish; sides of pronotum and elytra yellowish, latter with several cloudy blackish spots. Length 3.5-9 mm. Palearctic region	<i>Aphodaulacus</i> (partim: <i>nigrotessellatus</i> group)
150' -	Upper side nearly glabrous; sometimes elytra only laterally and apically faintly pubescent (fig. 258). Piceous-blackish; elytra brownish or yellowish with or without blackish spots. Length 5-10 mm. Western Palearctic region (mountain ranges)	<i>Agolius</i>
151 (149') -	Head and pronotum quite pubescent, at least pubescent on sides (fig. 257); epistome and pronotum disc coarsely densely punctured; distal segment of labial palpi, in males, cylindrical or feebly plump. Yellowish or more or less dark brownish; elytra with or without darker preapical spot. Length 2.5-5 mm. Afrotropical, Oriental, Nearctic (?) and Neotropical (?) region	<i>Trichaphodius</i>
151' -	Head and pronotum glabrous (fig. 256); epistome and pronotum disc finely or very finely punctured; second and third segment of labial palpi, in males, elliptical and strongly flattened (fig. 268). Brownish; elytra testaceous with more or less variegate darker spots. Length 3-6 mm. Afrotropical region . . .	<i>Trichaphodioides</i> (partim: males)
152 (146') -	Ninth elytral stria neither longer than eight nor joined to the tenth before humeral callus	153

152' - Ninth elytral stria always longer than eighth and joined to the tenth or ending very near to the latter before humeral callus 154

153 (152) - Clypeus anteriorly truncate or feebly sinuate at middle; front margin of pronotum, in males, distinctly foveolate (fig. 270); pygidium glabrous on disc. More or less dark brownish; lateral margins of head, pronotum and elytra paler. Length 10-17 mm. Afrotropical region *Paradeloparius*

153' - Clypeus quite rounded; front margin of pronotum not foveolate in both sexes (fig. 271); pygidium pubescent on disc. Quite testaceous or dark brownish with head and pronotum paler; or quite yellowish with variously shaped blackish spots or stripes on head, pronotum and elytra. Length 8-20 mm. Afrotropical region *Adeloparius*

154 (152') - Elytra brown-yellowish with or without darker preapical spot; juxtasutural interstice darkened. Brownish; elytra testaceous with more or less variegate darker spots. Length 3-6 mm. Afrotropical region *Trichaphodioides (partim: females)*

154' - Not all of the above characters simultaneously present 155

155 (154') - Head relatively much smaller (fig. 272); sexual dimorphism accentuate: often, in males, fore tibiae apical spur large or very large and variously shaped, usually longer than first two tarsal segments combined (figs 259-267); shape relatively more elongate; colour brownish or piceous, rarely testaceous with darker spots or stripes; in females, fore tibiae apical spur relatively smaller and normally acuminate toward apex; shape relatively stouter and wider, colour often pale testaceous without dark spots. Length 4-6 mm. Palearctic region *Neagolius*

155' - Head relatively much larger; clypeus semicircular (fig. 255). Blackish or piceous, rarely quite testaceous; sometimes elytra reddish or yellowish with or without blackish spots or stripes. Length 5-16 mm. Holarctic, Oriental and Afrotropical (?) region *Acrossus (partim: rufipes group)*

156 (97') - Basal margin of pronotum not bordered 157

156' - Basal margin of pronotum bordered 158

157 (156) - Elytra distinctly pubescent, with primary and secondary pseudinterstices; epistome flat; basal margin of pronotum at middle with a row of setae (fig. 273). Piceous. Length 4-4.5 mm. Afrotropical region *Obaphodius*

157' - Elytra glabrous; frontal suture distinctly impressed but not tuberculate; epistome with a distinct central tubercle; pronotum doubly punctured and, in males, with small median superficial impression at front margin; shoulder not denticulate (fig. 274). Reddish-testaceous; head and pronotum disc darker; elytra yellowish, darker on disc and with preapical indefinite darker spots. Length 6-8 mm. Neotropical region *Trichaphodiellus*

158 (156') - Elytra distinctly quite pubescent 159

158' - Elytra glabrous (x50), at most very shortly pubescent apically only 162

159 (158) - Hind angles of pronotum distinctly truncate and inwardly sinuate; elytra with a small denticle at shoulder, deeply and broadly striate, striae strongly crenulate; interstices convex, shortly pubescent (fig. 275). Dark brownish. Length 4 mm. Guatemala *Trichonotuloides*

159' - Hind angles of pronotum not truncate 160

160 (159') - Epistome and elytral interstices with small setigerous granula; shape strongly elongate (fig. 276). More or less dark testaceous. Length 5-6 mm. Southern Afrotropical region *Longaphodius*

160' -	Epistome and elytral interstices simply or subrugosely punctured	161
161 (160') -	Clypeus feebly sinuate at middle; epistome convex; basal border of pronotum very thin; elytra with striae shiny, deep, broad and subcrenulate; interstices flat, shortly pubescent (fig. 278). Blackish; head and pronotum strongly dull. Length 5.5-6.5 mm. Sikkim, Nepal	<i>Oxyaphodius</i>
161' -	Clypeus obtusely and more or less prominently angulate at middle; angle upturned; epistome distinctly sunk, foveolate at centre; basal border of pronotum thick (fig. 277). Blackish; sometimes head and pronotum reddish. Length 3.5-4.5 mm. Central Asia	<i>Oxycorythus</i>
162 (158') -	Frontal suture not at all tuberculate	163
162' -	Frontal suture trituberculate, at least with a median tubercle	165
163 (162) -	Elytra faintly or not at all denticulate at shoulder; pronotum moderately transverse; elytral striae distinct; clypeus rounded at sides; genae more protruding than eyes (fig. 280); first segment of hind tarsi distinctly longer than following two combined; paramera, in dorsal view, strongly divergent toward apex. Blackish; elytra reddish, sometimes with cloudy discal spot blackish. Length 4-5.5 mm. Holarctic region	<i>Planolinus</i> (partim: <i>uliginosus</i> group)
163' -	Elytra more or less strongly denticulate at shoulder	164
164 (163') -	Epipleura remarkably wide, distinct up to sutural angle; elytral striae very large apically; head subtriangular with genae strongly prominent, acute; interstices strongly carinate apically; fore tibiae very slender, distinctly outwardly arcuate, their two distal teeth joined in a strongly bifid process (fig. 139). Shiny, nearly glabrous; dark brown-reddish. Length 5.5-6 mm. Southern Afrotropical region	<i>Harmodactylus</i>
164' -	Epipleura normally wide, not distinct up to sutural angle; elytral striae rather fine; pronotum strongly transverse (fig. 279). Blackish or piceous. Length 4-9 mm. Palearctic and Nearctic region	<i>Stenotothorax</i>
165 (162') -	Clypeus acutely denticulate at sides, laterally bristled; epistome strongly convex and with transverse carina (fig. 283). (Females unknown). Brown-reddish. Length 5.5-6 mm. Southern Afrotropical region	<i>Allobodilus</i>
165' -	Not all of the above characters simultaneously present	166
166 (165') -	Hind angles of pronotum obliquely truncate, usually inward sinuate; frontal suture distinctly trituberculate; front margin of pronotum, in males, foveolate at middle (fig. 284). Blackish; elytra red or yellow, often with bands or spots blackish; seldom quite blackish. Length 5-15 mm. Holarctic, Mexican Transition Zone, Oriental and Australian region	<i>Aphodius</i>
166' -	Hind angles of pronotum obtusely rounded or truncate, but in this case, not inward sinuate	167
167 (166') -	Clypeal margin quite bristled (fig. 221); aedeagus digitiform (fig. 222). Testaceous or piceous with sides of pronotum reddish; elytra yellowish, sometimes with cloudy discal spots brownish. Length 5-12 mm. Palearctic, Afrotropical and Nearctic (?) region	<i>Bodilus</i> (partim: <i>ictericus</i> group)
167' -	Clypeal margin glabrous; aedeagus differently shaped	168
168 (167') -	Frontal suture with a median tubercle only	169
168' -	Frontal suture distinctly trituberculate	170
169 (168) -	Size relatively larger (minimum length 5.5 mm); sides of pronotum more or less	

- widely flattened; median tubercle of frontal suture, in males, bifid at tip (fig. 285). Brown-blackish, strongly dull. Length 5.5-7 mm. Eastern Palearctic region
- 169' - *Tristaphodius*
- Size relatively smaller (maximum length 5.5 mm); pronotum regularly convex; median tubercle of frontal suture, in males, regularly conical (figs 281, 282). Quite shiny, at least head and pronotum shiny. Blackish; sometimes elytra quite or partly reddish. Length 3.5-5.5 mm. Holarctic region
- 170 (168') - *Planolinus* (*partim: borealis* and *vittatus* groups)
- Inferior apical spur of middle tibiae, in males, shortened and hooked apically (fig. 269); epistome usually without transverse carina (fig. 286); aedeagus with membranous processes more or less elongate at apex of paramera (figs 289, 290). Quite blackish; sometimes elytra reddish spotted or brown-yellowish with darker spots. Length 4-10 mm. Holarctic region *Agoliinus*
- 170' - Inferior apical spur of middle tibiae, in males, not hooked apically; epistome with strong transverse carina (fig. 287); aedeagus without membranous processes at apex of paramera (figs 291, 292). Blackish or piceous; sometimes elytra reddish. Length 4-7 mm. Palearctic region *Agrilinus*

Tribe DIDACTYLIINI Pittino, 1984

Didactyliina Pittino, 1984: 270 (*subtribe*)
Didactyliini; M. Dellacasa, 1988a: 404 (*tribe*); Bordat, 1990b: 19, 78
Proctophanini Stebnicka & Howden, 1995: 742 (**n. syn.**)

KEY TO GENERA

- 1 - Transverse carinae of hind tibiae very reduced, sometimes obsolete; lateral margins of pronotum elongately ciliate 2
- 1' - Transverse carinae of hind tibiae rather strong; lateral margins of pronotum ciliate or glabrous 4
- 2 (1) - Clypeus distinctly sinuate at middle; genae ciliate; elytra glabrous (fig. 295). Brown-yellowish; epistome, pronotal and elytral disc darker. Length 3-4 mm. Nearctic and Neotropical region *Aidophus*
- 2' - Clypeus truncate or faintly sinuate at middle; genae glabrous; elytra laterally pubescent 3
- 3 (2') - Scutellum, at base, as wide as first three elytral interstices, rounded apically; elytral apex fringed with a belt of short setae; genal sutures carinate; pronotum widely and regularly rounded at sides (fig. 296). Brown-yellowish; head and pronotum darker. Length 4-4.5 mm. South-eastern Palearctic region *Trigonoscelus*
- 3' - Scutellum, at base, narrower than first two elytral interstices, acuminate apically; elytral apex glabrous; genal sutures not carinate; pronotum with greatest width at anterior third (fig. 297). Yellowish; sometimes head, pronotum and small elytral spots darker. Length 3-5 mm. Southern Palearctic and Afrotropical region, Madagascar *Didactylia*
- 4 (1') - Inferior carina of fore tibiae with two, in males exceptionally strong, teeth; the distal one placed under apical spur, the other at half of length; epistome anteriorly carinate; elytra apparently with twenty striae (fig. 306). Shining brown-blackish; sometimes clypeal margin and front angles of pronotum shadowy reddish. Length 4-7 mm. Southern Afrotropical region *Harmogaster*
- 4' - Inferior carina of fore tibiae not denticulate; epistome not carinate; sometimes elytra apparently with twenty striae 5
- 5 (4') - Elytral striae broad, with row of coarse punctures at each side so that elytra seems to have twenty striae 6
- 5' - Elytral striae normally shaped 8
- 6 (5) - Pronotum with lateral margins very shortly, nearly imperceptibly, bristled; pronotum with elliptical coarse punctation and without trace of median longitudinal groove (fig. 299). Dark brown; sometimes elytra brown-yellowish. Length 3-4.5 mm. Southern Afrotropical region *Pseudodrepanocanthus*
- 6' - Pronotum with lateral margins distinctly bristled and with rather deep median longitudinal groove 7
- 7 (6') - Lateral margins of pronotum shortly but distinctly bristled; odd elytral interstices tectiform, the even flat (fig. 298). Brown-blackish; elytra brownish. Length 4-6 mm. Austral Afrotropical region *Drepanocanthus*
- 7' - Lateral margins of pronotum elongately bristled; all elytral interstices with the same structure (fig. 300). Brown-blackish; sometimes elytra brown-yellowish. Length 3-4 mm. Australian and Southern Afrotropical region *Pseudoxyomus*

8 (5') -	Elytra, at least, distinctly and more or less diffusely pubescent	9
8' -	Elytra glabrous	10
9 (8) -	Clypeal margin elongately ciliate, crenulate; clypeus roundly protruding frontward; apical spurs of middle and hind tibiae very short (fig. 301). Yellowish. Length about 5 mm. Saudi Arabia	<i>Pseudomothon</i>
9' -	Clypeal margin glabrous; clypeus distinctly sinuate at middle; apical spurs of middle and hind tibiae normally elongate (fig. 302). Brown-blackish; elytra brown-yellowish with or without dark spots. Length 4-6 mm. Austral Afrotropical region . .	<i>Coptochirus</i>
10 (8') -	Elytral interstices alternately flat and convex; clypeus lobate at sides, at least in males (fig. 303); fore tibiae without apical spur. Brown-yellowish; sometimes elytra paler. Length 3.5-4 mm. Southern Afrotropical region	<i>Goiginus</i>
10' -	All elytral interstices with the same structure; clypeus rounded at sides in both sexes (fig. 305); fore tibiae, in males, with apical spur	11
11 (10') -	Genae not ciliate; the greatest width of pronotum at base (fig. 304); pygidium glabrous; sexual dimorphism nearly faint. Shiny brown-blackish. Length 5-6.5 mm. Australian region	<i>Proctophanes</i>
11' -	Genae ciliate; the greatest width of pronotum at middle; pygidium with some long erected setae; in males, first segment of middle and hind tarsi with one or two spinules at inner margin (fig. 305). Shiny brown-blackish; sometimes elytra brown-reddish. Length 3-4 mm. Nearctic, Neotropical, Australian and Southern Afrotropical region	<i>Australaphodius</i>

Part III
Tribe APHODIINI
DESCRIPTIONS OF GENERA AND RESPECTIVE TYPE SPECIES
(alphabetical order)

Genus *ACANTHAPHODIUS* A. Schmidt, 1909

Acanthaphodius A. Schmidt, 1909b: 67

TYPE SPECIES: *Acanthaphodius bruchi* A. Schmidt, 1909 (monotypy).

DESCRIPTION. Small size species (length 3-4 mm); oblong convex, shiny, nearly glabrous. Head piceous, reddish at sides; pronotum piceous, front angles and median basal spot reddish; elytra dirty yellowish with several piceous spots more or less widened. Head with epistome finely punctured; clypeus sinuate at middle, rounded at sides, very thinly bordered, border glabrous; genae obtusely rounded, shortly bristled, more protruding than eyes; latter small; frontal suture not tuberculated. Pronotum feebly narrowed posteriorly, obliquely foveolate near front angles and with a discal longitudinal groove anteriorly shortened; doubly irregularly strongly punctured; sides rounded; hind angles obtusely rounded; base bordered. Scutellum small, triangularly elongate, flat. Elytra denticulate at shoulder; deeply striate; striae crenulate; interstices convex, unpunctured, lateral ones shortly sparsely pubescent. Fore tibiae proximally finely serrulate, upper side smooth. Middle and hind tibiae with feeble transverse carinae on outer face, apically fimbriate with spinules elongate and irregularly unequal. Pygidium with few and elongate discal setae. Sexual dimorphism probably shown in males (females unknown) by fore tibiae with two distal teeth only at outer margin, third tooth perpendicular to front margin, placed near tarsal insertion; posterior margin of hind femora with hornshape elongate process apically globulous. Aedeagus with short and stout paramera, apically curved and acuminate. Epipharynx transverse, distinctly sinuate at middle of front margin, rounded at sides; epitorma nearly lacking; corypha with two very elongate, strongly prominent spiculae; chaetopariae sparsely arranged.

DISTRIBUTION. Neotropical region.

Acanthaphodius bruchi A. Schmidt, 1909 (figs 307, 311-313)

Acanthaphodius bruchi A. Schmidt, 1909b: 67; G. Dellacasa & Gordon, 1997: 356

TYPE LOCALITY: Rio Negro [Argentina].

TYPE DEPOSITORY: Museo Argentino de Ciencias Naturales, Buenos Aires (lectotype male, not examined)

DESCRIPTION. Length 3-4 mm; oblong, convex, shiny, nearly glabrous. Head piceous, laterally widely reddish; pronotum piceous, front angles and a basal median indefinite spot reddish; elytra dirty yellowish with more or less wide basal, subhumeral and preapical piceous spots, as well as apex and suture; antennal club blackish; scutellum piceous; legs more or less dark brownish. Head rather wide; epistome gibbous, regularly finely punctured; clypeus distinctly sinuate at middle, rounded at sides, quite thinly

bordered, border glabrous; genae obtusely rounded, more protruding than eyes, shortly ciliate; frontal suture thinly impressed, not at all tuberculate; front quite distinctly regularly punctured. Pronotum feebly narrowed posteriorly; obliquely foveolate from anterior angles toward disc, latter longitudinally sulcate toward base; sides rounded, thinly bordered, somewhat sinuate before hind angles; latter subtruncate; base distinctly thinly bordered, border marked at middle by a belt of contiguous strong irregular punctures. Scutellum triangularly elongate, flat, alutaceous, sparsely superficially punctured. Elytra oval, denticulate at shoulder, strongly striate; striae deep, distinctly crenulate, tenth joined to second, ninth to third, eighth and sixth and fourth one shortened toward apex; interstices moderately convex, shiny and nearly smooth, lateral interstices very shortly sparsely pubescent; epipleura wide. Hind tibiae superior apical spur shorter than first tarsal segment, latter as long as following three combined. Male: fore tibiae slender and elongate; outer margin with only two distal teeth and proximally faintly serrulate; third tooth perpendicular to front margin, placed near tarsal insertion; hind femora provided with a strong elongate hornshape, apically globulose, process; metasternal plate distinctly concave, faintly grooved longitudinally at middle, regularly rather densely punctured. Female unknown.

DISTRIBUTION. Southwestern Argentina and Chile.

Genus *ACANTHOBODILUS* G. Dellacasa, 1983

Aphodius (*Acanthobodilus*) G. Dellacasa, 1983: 105

Acanthobodilus; Ádám, 1994: 13

TYPE SPECIES: *Aphodius immundus* Creutzer, 1799 (original designation).

DESCRIPTION. Medium size species (length 5-6.5 mm), elongate, oval, feebly convex, glabrous, dull. Dark yellowish, more or less widely shadowy brownish. Head with epistome nearly flat, finely punctured; clypeus either not or very feebly sinuate at middle, rounded at sides, quite thinly bordered, border shortly bristled; genae distinctly ciliate, either not or more protruding than eyes; latter rather small; frontal suture not at all tuberculate. Pronotum feebly convex, transverse, doubly irregularly punctured; sides and base finely bordered. Scutellum small, triangularly elongate. Elytra oval; shoulder denticulate; striae fine, either not or feebly crenulate; interstices flat. Fore tibiae distally tridentate and proximally serrulate at outer margin, their upperside smooth. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with rather stout and irregularly unequal spinules. Pygidium with few, elongate and straight discal setae; its apical margin fimbriate with moderately elongate and sparse cilia. Sexual dimorphism shown in males, mainly by relatively less dense pronotal punctation. Aedeagus rather stout, with paramera rounded apically. Epipharynx bisinuate at front margin; epitorma elongate, drop-shaped, corypha apically with several protruding elongate spiculae; pedia with dense and fine pubescence and with few chaetae subserially scattered; chaetopariae short and densely arranged.

DISTRIBUTION. Palearctic region.

Acanthobodilus immundus (Creutzer, 1799) (figs 308, 314-316)

Aphodius immundus Creutzer, 1799: 57

Aphodius (*Bodilus*) *immundus*; Mulsant & Rey, 1871 (1870): 474; G. Dellacasa, 1983: 106

Acanthobodilus immundus; Ádám, 1994: 13

TYPE LOCALITY: Wien [Austria] (conventional)

TYPE DEPOSITORY: unknown to authors

DESCRIPTION. Length 5-6 mm, feebly convex, elongate, oval, rather dull, glabrous. Yellowish; usually epistome, pronotal disc and two rounded lateral spots brownish, elytral suture and epipleura darker. Head with epistome feebly gibbous, densely, nearly regularly and distinctly punctured; clypeus faintly sinuate at middle, rounded at sides, quite thinly bordered, border shortly and sparsely bristled; genae quite rounded, distinctly ciliate, not more protruding than eyes; frontal suture distinctly impressed, not at all tuberculate. Pronotum somewhat convex, transverse, microreticulate, with double, rather dense and nearly regularly scattered punctation; hind angles rounded; sides and base finely bordered. Scutellum triangularly elongate, microreticulate, with few sparse punctures on basal half. Elytra moderately convex, oval, finely microreticulate, with a small acuminate tooth at shoulder; striae fine, superficially punctured, not crenulate, first one apically wider, deep and convergent toward elytral suture; interstices flat, with fine and sparse but distinct punctation. Hind tibiae superior apical spur as long as first tarsal segment; latter as long as following three combined. Male: fore tibiae apical spur relatively shorter, stouter and more distinctly curved downward; epistome more gibbous; pronotum more convex and more sparsely punctured on disc. Female: fore tibiae apical spur relatively slender and elongate; epistome nearly flat; pronotum feebly convex, rather regularly and densely punctured on disc.

DISTRIBUTION. Europe, Mediterranean Africa, Asia.

Genus *ACROSSIDIUS* A. Schmidt, 1913

Sericomorpha MacLeay *apud* Harold, 1862: 381 (*nomen nudum*)

Aphodius (*Acrossidius*) A. Schmidt, 1913: 135; Balthasar, 1964: 155

Acrossidius; Stebnicka & Howden, 1995: 725

TYPE SPECIES: *Aphodius tasmaniae* Hope, 1846 (subsequent designation: Balthasar, 1964).

DESCRIPTION. Large species (length 9-15 mm); elongate, moderately convex, shiny; elytra glabrous on disc, shortly and more or less distinctly pubescent on preapical declivity. Quite blackish to various shades of brown. Head with epistome feebly convex; clypeus anteriorly subtruncate, rounded at sides, strongly bordered, border sparsely bristled; genae obtusely angulate, elongately ciliate, distinctly more protruding than eyes; latter rather small; frontal suture distinct, feebly raised at sides; front with or without transverse tubercle. Pronotum transverse, without border at anterior margin; lateral margins bordered and elongately straightly bristled; hind angles more or less widely rounded; base not bordered. Scutellum small, triangularly elongate with curved sides. Elytra elongate, not denticulate at shoulder, callose on preapical declivity; finely

striate, striae subcrenulate; interstices convex, punctulate. Legs elongate. Fore tibiae distally tridentate and proximally serrulate at outer margin, their upperside smooth. Middle and hind tibiae widened toward apex with transverse carinae on outer face rather feeble, fimbriate with apical dense, very elongate and irregularly unequal spinules. Pygidium densely and subgranulosely punctured; punctures finely and elongately setigerous; its apical margin with a belt of elongate straight cilia. Sexual dimorphism shown in males mainly by head nearly semicircular, by pronotum at base usually wider than elytra, by fore tibiae apical spur stouter and abruptly bent downward. Aedeagus strongly sclerotized; tegmen without gibbosity before base; parameres with dorsal membrane terminating in variously elongate processes. Epipharynx widely transverse, nearly straight or feebly sinuate at front margin, widely rounded at sides; epitorma narrowly obconical; corypha with a dense clump of apical spiculae distinctly prominent; pedia very densely pubescent; chaetopariae short and rather slender.

DISTRIBUTION. South-eastern Australian region.

Acrossidius tasmaniae (Hope, 1846) (figs 309, 317-319)

Aphodius tasmaniae Hope, 1846: 147

Aphodius (*Acrossidius*) *tasmaniae*; A. Schmidt, 1913: 135

Acrossidius tasmaniae; Stebnicka & Howden, 1995: 726

TYPE LOCALITY: "Van Diemen's Land" [Tasmania].

TYPE DEPOSITORY: Hope Department Entomology, University Museum. Oxford (type not examined).

DESCRIPTION. Length 9-14 mm, yellowish brown to blackish, sides of pronotum usually paler. Head rather large; epistome nearly flat, finely punctured; clypeus anteriorly subtruncate, rounded at sides, quite bordered, border upturned and thickened at middle, sparsely ciliate; genae obtuse, elongately bristled, distinctly more protruding than eyes; frontal suture distinct, transversely raised near eyes; front with a median tubercle behind frontal suture. Pronotum transverse; lateral margins strongly bordered, border elongately, nearly straightly and rather densely bristled; hind angles widely rounded; base not bordered. Scutellum flat, coarsely irregularly punctured. Elytra with striae almost finely punctured, subcrenulate; interstices finely punctured, punctures aligned in longitudinal rows near striae; epipleura elongately densely quite bristled. Male: head nearly semicircular; clypeus anteriorly faintly truncate at middle; epistome nearly flat, finely regularly punctured, front with a strong bifid median tubercle behind frontal suture; pronotum more or less strongly convex, usually wider than elytra, sometimes with slight median longitudinal groove; superficially sparsely and very finely punctured; elytra parallel-sided, with striae finely punctured, not crenulate; interstices moderately convex, sparsely shortly pubescent on the apical third; fore tibiae apical spur short and stout, rounded and somewhat hooked inward apically, abruptly bent downward; teeth at outer margin rather spaced each other; transverse carinae of hind tibiae rather feeble; superior apical spur as long as first tarsal segment; latter as long as following three combined. Female: head relatively smaller; epistome more convex and more coarsely densely punctured; clypeus faintly sinuate at middle; median frontal tubercle behind

frontal suture weaker but distinct; pronotum as wide as elytra, relatively more densely and coarsely punctured; elytra oval, feebly widened toward apex, nearly faintly pubescent on preapical declivity; striae more distinctly punctured, crenulate; interstices nearly flat and relatively more distinctly punctured; fore tibiae apical spur sharply acuminate apically but, as in males, downward abruptly bent; teeth at outer margin approximate; superior apical spur of hind tibiae longer than first tarsal segment; latter as long as following two combined.

DISTRIBUTION. South-eastern Australia (from Eyre Peninsula to Eastern New South Wales), Tasmania and New Zealand.

REMARKS. Species with high variable morphological characters due to sexual dimorphism, dimensions and ecology. Larger males have wide semicircular head with evident frontal tubercle; pronotum strongly convex and wider than elytra (in small males the relative size of head and pronotum decreases). In larger females the frontal tubercle is well developed, the punctures of pronotum are moderately denser, elytra are widened toward apex and the preapical pubescence somewhat more distinct. Ecological variations affect mainly the colour: specimens collected in mountain areas are often melanic while specimens from lowlands are paler.

Genus *ACROSSOIDES* A. Schmidt, 1913 **stat. nov.**

Aphodius (*Acrossoides*) A. Schmidt, 1913: 145; Stebnicka & Howden, 1995: 725 (as synonym of *Acrossidius*)

TYPE SPECIES: *Aphodius yorkensis* Blackburn, 1892 (monotypy).

DESCRIPTION. Rather large species (length 9-14 mm), elongate, convex, shiny, nearly glabrous. Chestnut-brown. Head rather small; epistome feebly convex at middle, flattened frontward, irregularly punctured; clypeus faintly sinuate at middle, rounded at sides and with margin strongly upturned and elongately, densely ciliate; genae rounded, elongately ciliate, more protruding than eyes; latter rather small; frontal suture distinctly impressed and feebly tuberculate laterally only; front with feeble median bifid tubercle. Pronotum strongly convex, nearly regularly, not coarsely punctured; completely bordered; lateral margins elongately, straightly ciliate. Scutellum small, widely ogival, apically rounded. Elytra subparallel-sided, not denticulate at shoulder, distinctly crenato-striate; interstices feebly convex, rather sparsely punctured, toward apex faintly pubescent. Fore tibiae distally strongly tridentate and proximally not serrulate at outer margin, upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules elongate, dense and irregularly unequal. Hind tibiae superior apical spur longer than first tarsal segment; latter shorter than following two combined. Pygidium densely and elongately pubescent. Sexual dimorphism shown in males by more strongly convex pronotum and by fore tibiae apical spur short and lanceolate. Aedeagus stout; paramera rather short, rounded and feebly membranous apically. Epipharynx widely rounded at sides and at front margin; latter with very elongate, rather robust and dense spiculae; epitorma faint; corypha feebly protruding beyond anterior margin, proximally with four extremely short chaetae, distally with a tuft of setae, dense and rather elongate; pedia anteriorly sparsely,

posteriorly very densely and finely pubescent with intermixed several slender and rather elongate spines; mesium broadly transverse.

DISTRIBUTION. South-eastern Australia

REMARKS. We cannot herein accept the synonymy of *Acrossoides* versus *Acrossidius* proposed by Stebnicka & Howden (1995) due to the significantly different morpho-anatomical features complex of the two genus-group taxa involved. Moreover, it seems to us that, basing upon description, *Acrossidius brittoni* Stebnicka & Howden, 1995 (Reedy Ck., South Australia), might pertain to genus *Acrossoides* as well.

Acrossoides yorkensis (Blackburn, 1892) **n. comb.** (figs 310, 324-326)

Aphodius yorkensis Blackburn, 1892: 209

Aphodius (*Acrossoides*) *yorkensis*; A. Schmidt, 1913: 145

Acrossidius yorkensis; Stebnicka & Howden, 1995: 728

TYPE LOCALITY: "S. Australia, Yorke's Peninsula".

TYPE DEPOSITORY: Natural History Museum. London (lectotype male not examined)

DESCRIPTION. Length 10-14 mm, elongate, pronotum strongly convex, elytra moderately convex, strongly shiny, nearly glabrous. Chestnut-brown, antennal club yellowish. Head rather small; epistome feebly convex and sparsely irregularly punctured at middle, frontward widely flattened and rugosely, confusedly punctured; clypeus faintly sinuate at middle, rounded at sides, not bordered but with margin strongly upturned and elongately, densely ciliate; genae rounded, elongately ciliate, more protruding than eyes; genal sutures distinct; frontal suture distinctly impressed and subtuberculate laterally only; front proximally smooth; coarsely, rather regularly punctured distally and with a feeble, transverse, faintly bifid median tubercle. Pronotum strongly convex, simply, almost finely and rather regularly punctured; anterior margin thickly bordered, border slightly crenulate; sides broadly rounded, distinctly bordered, border elongately, densely, straightly ciliate; hind angles widely rounded, thickly bordered; base distinctly bordered, border crenulate and sparsely bristled. Scutellum alutaceous, irregularly superficially punctured. Elytra subparallel-sided, moderately convex; epipleura strong, elongately unequally ciliate; striae deep, rather superficially punctured, feebly crenulate; interstices moderately convex, finely, sparsely punctured, punctures mostly arranged in longitudinal rows near striae, apically with sparse, extremely short, yellowish setae. Male: pronotum subquadrate, relatively more strongly convex and less densely punctured, wider than elytral base; fore tibiae distinctly arcuate with the two distal outer teeth strongly elongate; apical spur short, lanceolate and sharply pointed. Female: pronotum transverse, relatively less convex and more densely punctured, as wide as elytral base; fore tibiae nearly straight with the two distal teeth normally shaped, apical spur slender.

DISTRIBUTION. South-eastern Australia (York Peninsula and Kangaroo Island).

Genus *ACROSSUS* Mulsant, 1842

Acrossus Mulsant, 1842: 164; Paulian, 1942: 63; Ádám, 1994: 14

Aphodius (*Acrossus* fraction *Acrossus*); Mulsant & Rey, 1870b (1869): 473

Aphodius (*Acrossus*); Mulsant & Rey, 1871 (1870): 474; Reitter, 1892: 244; Balthasar, 1964: 116; G. Dellacasa, 1983: 108

Aphodius (secção *Hemicyclorhinus*) Seabra, 1909: 12 (**n. syn.**)

Aphodius (Artengruppe *Acrossus*); Endrödi, 1964a: 192

Aphodius (group *Acrossus*); Endrödi & Rakovič, 1981:48

TYPE SPECIES: *Scarabaeus luridus* Fabricius, 1775 (subsequent designation: Reitter, 1892).

DESCRIPTION. Medium or large size species (length 5-16 mm), moderately convex, elongate, oval, shiny or dull, glabrous or with elytra more or less widely pubescent toward apex. Blackish or piceous, rarely quite testaceous, sometimes with yellowish or reddish elytra, latter with several blackish spots somewhat confluent or arranged in oblique belts. Head very large, epistome flat, sparsely punctured; clypeus semicircular, mostly strongly bordered; border glabrous; genae ciliate, usually large and acute, strongly more protruding than eyes; latter rather small; frontal suture distinctly impressed, not tuberculate; front nearly smooth. Pronotum transverse, sometimes subquadrate, feebly convex, generally finely, rarely densely and coarsely punctured, often on sides with few large punctures irregularly scattered; lateral margins usually strongly bordered; base always not bordered, sometimes bisinuate. Scutellum small, triangular, sparsely punctured or quite smooth. Elytra usually glabrous, rarely more or less widely pubescent apically; striae fine and superficial; interstices more or less densely punctured. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. First segment of anterior tarsi longer than second one. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with spinules elongate and irregularly unequal. Pygidium with several elongate straight setae on disc; its apical margin elongately ciliate. Sexual dimorphism shown in males by stronger clypeal border; elytra duller and more distinctly punctured; apical spur of fore tibiae obtusely rounded or truncate apically. Aedeagus strongly sclerotized; tegmen elongate, paramera stout, short, often apically pubescent. Epipharynx widely rounded; epitorma reduced under proplegmatium but distally extant several strong chaetae longitudinally inserted at middle; corypha lacking; pedia generally completely provided of extremely fine and dense pubescence; chaetopariae often nearly faint.

DISTRIBUTION. Holarctic, Oriental and Afrotropical (?) region.

Acrossus luridus (Fabricius, 1775) (figs 320, 327-329)

Scarabaeus luridus Fabricius, 1775: 19

Acrossus luridus; Mulsant, 1842: 274; Ádám, 1994: 14

Aphodius luridus; Erichson, 1848: 894

Aphodius (*Acrossus*) *luridus*; Mulsant & Rey, 1871 (1870): 474; Landin, 1956a: 216 (lectotype designation)

TYPE LOCALITY: "Anglia" [Great Britain].

TYPE DEPOSITORY: Banks collection, Natural History Museum. London (lectotype not examined).

DESCRIPTION. Length 6-12 mm, moderately convex, elongate-oval, feebly shiny,

glabrous, elytra sparsely pubescent apically. Blackish; elytra yellowish with several blackish spots obliquely belted or confluent, sometimes quite blackish. Head flat, shiny; epistome subrugosely punctured anteriorly and regularly punctured posteriorly; clypeus widely semicircular, thinly bordered; genae acute, more protruding than eyes and elongately bristled, frontal suture not tuberculate. Pronotum transverse, feebly convex, doubly punctured; lateral margins finely bordered; hind angles obtuse; base not bordered. Scutellum widely triangular, densely coarsely punctured basally, smooth and acuminate apically. Elytra feebly convex, widened posteriorly; striae fine, not crenulate; interstices flat, microreticulate, sparsely punctured, near apex with short, testaceous, sparse pubescence; fourth interstice distinctly widened preapically. First segment of hind tarsi somewhat shorter than superior apical spur of tibiae and as long as following three combined. Male: head nearly flat; frontal suture extremely fine; apical spur of front tibiae strongly curved downward, parallel-sided, truncate apically; pronotum relatively more sparsely and superficially punctured. Female: head feebly convex; frontal suture deep; apical spur of front tibiae slender, elongate, straight; pronotum relatively more coarsely and densely punctured.

DISTRIBUTION. Holarctic region.

Genus *ADELOPARIUS* A. Schmidt, 1913

Aphodius (Adeloparius) A. Schmidt, 1913: 134

Adeloparius; Paulian, 1942: 65

Aphodius (Adeloparius); Landin, 1959: 6; M. Dellacasa, 1988a (1987): 230

Aphodius (Aphodius Artengruppe Adeloparius); Endrödi, 1960b: 180

Aphodius (Artengruppe Adeloparius); Endrödi, 1964a: 225

Aphodius (group Adeloparius); Endrödi & Rakovič, 1981: 49

TYPE SPECIES: *Aphodius trimaculatus* A. Schmidt, 1909 (subsequent designation: Paulian, 1942).

DESCRIPTION. Medium or large size species (length 8-20 mm); more or less oval-elongate, moderately convex, more or less shiny, glabrous. Quite testaceous or dark brownish with head and pronotum paler, or brown-yellowish with variously shaped blackish spots or belts on head, pronotum and elytra. Head wide; epistome distinctly gibbous and rather finely punctured; clypeus semicircular or faintly sinuate at middle, widely rounded at sides, quite bordered, border shortly bristled; genae rounded, ciliate, not or feebly more protruding than eyes; latter small; frontal suture more or less distinct, not at all tuberculate. Pronotum strongly transverse; irregularly, rather superficially, doubly punctured; lateral margins and hind angles thickly bordered; hind angles either rounded or obliquely truncate; base more or less distinctly bisinuate, not bordered. Scutellum small, triangular. Elytra widely oval, not denticulate at shoulder; striae finely but distinctly punctured, first as wide as others ones apically, ninth stria not joined with tenth before shoulder; interstices flat or moderately convex, very finely punctured. Fore tibiae distally strongly tridentate and proximally not serrulate at outer margin; upper side with few, large, irregularly scattered punctures. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with elongate spinules alternately

strongly unequal. Pygidium fringed with elongate setae on apical half. Sexual dimorphism nearly faint: pronotum, in males, relatively more widely transverse and less convex. Aedeagus with rather elongate and nearly straight parameres, sometimes with many small apical spiculae. Epipharynx transverse; anterior margin with several distinct lobes; epitorma rather narrowed anteriorly, strongly widened proximally; corypha with four or six apical spiculae more or less densely arranged; chaetopariae extended nearly till epipharyngeal base; pedia densely pubescent with few stouter spinules mixed.

DISTRIBUTION. Afrotropical region.

Adeloparius trimaculatus (A. Schmidt, 1909) (figs 321, 330)

Aphodius trimaculatus A. Schmidt, 1909c: 103

Aphodius (Adeloparius) trimaculatus; A. Schmidt, 1913: 134; Landin, 1959: 6

Adeloparius trimaculatus; Paulian, 1942: 67

TYPE LOCALITY: Weyns, Orient. Prov. [Zaire].

TYPE DEPOSITORY: Musée Royal de l'Afrique Centrale, Tervuren (holotype female examined).

DESCRIPTION. Length 12-13 mm, convex, widely oval, shiny, glabrous; head and pronotum more bright than elytra. Head and pronotum shiny orange, the former with a small brownish spot on epistome, the latter with two small rounded blackish lateral spots; elytra testaceous, moderately shiny. Head nearly semielliptical; epistome distinctly gibbous, doubly and rather densely irregularly punctured; large punctures, twice to three times larger than small punctures, rather densely and regularly arranged distally, punctation fine and simple at middle; clypeus faintly sinuate at middle, widely rounded at sides, quite thinly bordered, border upturned and, mainly frontward, rather elongately finely bristled; genae quite rounded, sparsely ciliate, slightly more protruding than eyes; frontal suture faintly impressed, feebly raised laterally; front doubly sparsely irregularly punctured. Pronotum widely transverse, rather strongly convex, doubly punctured; smaller fine punctures superficial and scattered throughout, on sides there are few large punctures irregularly sparse and near front margin a lateral belt of contiguous rather larger punctures too; lateral margins regularly rounded and thickly bordered; hind angles rounded and thickly bordered; base bisinuate, not bordered. Scutellum basally as wide as first three elytral interstices, with few small punctures on basal half. Elytra widely regularly oval; finely but distinctly striate; striae crenulate; interstices feebly convex, very finely and sparsely punctured. Fore tibiae apical spur rather elongate, regularly acuminate toward apex. Hind tibiae superior apical spur somewhat shorter than first tarsal segment; latter as long as following three combined. Male unknown.

DISTRIBUTION. Cameroon, Zaire.

REMARKS. Besides the holotype, only one female specimen from Batanga (Cameroon) was examined.

Genus *AFRODIAPTERNA* G. Dellacasa, 1984 **stat. nov.**

Aphodius (*Afrodiapterna*) G. Dellacasa, 1984: 181

TYPE SPECIES: *Aphodius heleninae* G. Dellacasa, 1984 (original designation).

DESCRIPTION. Rather small size species (length 4-6 mm), short, stout, strongly convex, moderately shiny, glabrous. Blackish, pronotum with front and hind angles reddish; elytra with large pale-red posterior spot. Head with epistome gibbous, irregularly punctured; clypeus feebly sinuate at middle, rounded at sides, rather thickly bordered, border faintly upturned, glabrous; genae shortly ciliate, more protruding than eyes; latter small; frontal suture not tuberculate. Pronotum strongly convex, with rather irregular double punctuation; either bordered or only with vestiges of a border at base. Scutellum large, triangularly elongate, more or less coarsely punctured. Elytra short, strongly convex, almost of the same length of head plus pronotum; striae crenulate; interstices nearly flat or convex. Fore tibiae distally tridentate and proximally not serrulate at outer margin; upper side with few large punctures near inner margin. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with strong and very short equal spinules. First segment of hind tarsi twice longer than superior apical spur and longer than following three combined. Pygidium coarsely and densely punctured, punctures very shortly setigerous. Sexual dimorphism very distinct and shown in males mainly by fore tibiae apical spur large and spatulate. Aedeagus enough short, strongly sclerotized; paramera widened apically. Epipharynx distinctly sinuate at front margin; latter with a belt of haired lobes; corypha subconical and protruding beyond front margin, apically with several spiculae very short and quite strong; gymnopodia with numerous chaetae irregularly mixed.

DISTRIBUTION. Afrotropical region.

Afrodiapterna heleninae (G. Dellacasa, 1984) **n. comb.** (figs 322, 331-333)

Aphodius (*Afrodiapterna*) *heleninae* G. Dellacasa, 1984: 182.

TYPE LOCALITY: Parc National Taï (Côte d'Ivoire).

TYPE DEPOSITORY: Muséum national d'Histoire naturelle, Paris (holotype and allotype examined).

DESCRIPTION. Length 5-6 mm, shortly oval, strongly convex, moderately shiny, glabrous. Blackish; sides of pronotum faintly reddish; elytra with pale red spot widened from scutellum and the half of sides toward apex. Head moderately convex; distinctly microreticulate; with irregular punctation, punctures moderately impressed and variously sized; clypeus distinctly sinuate at middle, completely bordered, border slightly upturned, somewhat more strongly upturned anteriorly; epistome gibbous with a faint trace of transverse carina; genae obtusely rounded, barely more protruding than eyes; frontal suture distinctly impressed. Pronotum convex; superficially microreticulate and therefore moderately shining; with double punctation, large punctures, widely scattered almost throughout, mixed with extremely fine and dense ones; sides rounded, somewhat narrowed towards base, finely bordered; hind angles obtuse; base with lateral vestiges of border and with a belt of coarse contiguous punctures. Scutellum large,

triangularly elongate, apically acuminate, with few large and sparse punctures mixed with very fine and more numerous ones. Elytra strongly convex, moderately shiny; striae large, deep, superficially punctured, indistinctly crenulate; interstices feebly convex, superficially microreticulate, with extremely fine and sparse punctation. Male: upper side relatively more opaque; fore tibiae more slender and elongate, their apical spur spatulate, downward bent. Female: upper side relatively more shining; fore tibiae more stout and less elongate, their apical spur strong, apically acuminate and nearly straight.

DISTRIBUTION. Ivory Coast, Uganda.

Genus *AGANOCROSSUS* Reitter, 1895

Aphodius (*Aganocrossus*) Reitter, 1895: 208; Balthasar, 1964: 156; M. Dellacasa, 1988a (1987): 365

Aganocrossus; Paulian, 1942: 47

Aphodius (*Aphodius* Artengruppe *Aganocrossus*); Endrödi, 1960b: 142

Aphodius (Artengruppe *Aganocrossus*); Endrödi, 1964a: 139

Aphodius (group *Aganocrossus*); Endrödi & Rakovič, 1981: 45; Stebnicka & Howden, 1995: 716

TYPE SPECIES: *Aphodius postpilosus* Reitter, 1895 (monotypy).

DESCRIPTION. Rather small or medium size species (length 3-6 mm); oblong, convex, more or less shiny; head and pronotum glabrous; elytra more or less widely straight pubescent. Piceous or brownish; elytra concolorous or with indefinite yellowish or reddish spots more or less broadened. Head trapeziform; epistome gibbous, quite irregularly punctured; clypeus anteriorly subtruncate, usually faintly sinuate at middle and rounded at sides, rarely completely rounded, quite finely bordered, border shortly bristled; genae small, rounded, elongately bristled, usually not more protruding than eyes; latter small; frontal suture more or less deeply impressed, not at all tuberculate. Scutellum small, triangular. Pronotum transverse, doubly punctured, disc with smaller punctures only; sides rounded, bordered, often elongately bristled; hind angles obtusely truncate, sometimes feebly inward sinuate; base not bordered. Elytra oval; shoulder denticulate; striae usually distinctly crenulate; interstices feebly convex, quite or toward apex only, with a single or a double row of straight setae infeudate on coarse punctures aligned near striae. Fore tibiae distally tridentate and proximally serrulate at outer margin, apical spur stout, acuminate, somewhat longer than first segment of tarsi; upper side coarsely, irregularly punctured. Middle and hind tibiae with feeble transverse carinae on outer face, apically fimbriate with spinules elongate and irregularly unequal. Superior apical spur of hind tibiae shorter than first tarsal segment; latter, at least, as long as following two combined. Pygidium with dense, recumbent and moderately elongate pubescence; its apical margin fimbriate with few, fine and very elongate straight cilia. Sexual dimorphism shown in males by more deeply grooved metasternal plate. Aedeagus with paramera nicely differentiated from species to species, sometimes distinctly and densely pubescent apically. Epipharynx transverse; front margin usually sinuate at middle and at each side; epitorma nearly regularly conical; corypha apically provided by two elongate spiculae.

DISTRIBUTION. Afrotropical, Australian, Oriental and Palearctic region

Aganocrossus postpilosus (Reitter, 1895) **n. comb.** (fig. 323, 334-336)

Aphodius (*Aganocrossus*) *postpilosus* Reitter, 1895: 209; A. Schmidt, 1907b : 85 (as synonym of *urostigma* Harold, 1862); Bordat & G. Dellacasa, 1996: 145 (*bona species*)

TYPE LOCALITY: Shanghai, China

TYPE DEPOSITORY: Magyar Természettudományi Múzeum. Budapest (lectotype female examined)

DESCRIPTION. Length 4-5 mm; oblong, convex, shiny; head and pronotum glabrous, elytra straightly pubescent on sides and toward apex. Piceous-blackish; antennae and legs piceous-reddish. Head with epistome feebly gibbous, rather sparsely irregularly punctured; clypeus anteriorly subtruncate, faintly sinuate at middle, before eyes slightly inward curved, quite finely bordered, border shortly bristled; genae rounded, elongately bristled, not more protruding than eyes; frontal suture not tuberculate. Pronotum transverse, doubly, toward sides and near front margin, strongly punctured, mixed much smaller punctures but nearly smooth on disc; sides rounded, distinctly bordered, border with coarse punctures, elongately piliferous, as well as subtruncate hind angles; base not bordered. Scutellum triangularly elongate, feebly convex, sparsely punctured basally. Elytra oval, apically alutaceous; shoulder denticulate; striae distinct, subcrenulate; interstices feebly convex, dorsally, toward apex, straightly haired, but from eighth to tenth interstice quite provided with a single row of yellowish straight setae infeudate on coarse punctured aligned near striae. Hind tibiae superior apical spur shorter than first segment of tarsi; latter as long as following three combined. Male: metasternal plate with deep longitudinal groove at middle. Female: metasternal plate with feeble longitudinal groove at middle.

ASCERTAINED DISTRIBUTION. India, Sikkim, Laos, Vietnam, South Korea, China, Japan.

Genus *AGOLIINUS* A. Schmidt, 1913

Aphodius (*Agoliinus*) A. Schmidt, 1913: 162; Balthasar, 1964: 375 (as synonym of *Agrilinus*); G. Dellacasa, 1983: 122

Agoliinus; Ádám, 1994: 13

TYPE SPECIES: *Aphodius congregatus* Mannerheim, 1853 (subsequent designation: G. Dellacasa, 1983).

DESCRIPTION. Small or medium size species (length 4-10 mm), elongate, strongly convex, shiny, usually glabrous. Quite blackish, sometimes elytra reddish spotted or brownish with darker spots. Head with epistome more or less strongly convex, distinctly densely punctured, often punctation subrugose frontward; clypeus sinuate at middle, either rounded or angulate at sides, bordered, border glabrous; genae ciliate, obtusely rounded, more protruding than eyes; latter small; frontal suture tuberculate. Pronotum strongly convex, irregularly punctured; hind angles either obtuse or rounded; base bordered. Scutellum small, widely triangular with curved sides. Elytra with epipleura distinct at shoulder, somewhat widened backward; striae rather strongly impressed, usually crenulate; interstices flat or convex, punctured. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. Middle and hind tibiae with

strong transverse carinae on outer face; apically fimbriate with short and equal spinules. Pygidium with short, rather dense, recumbent pubescence; its apical margin fimbriate with fine and very elongate cilia. Sexual dimorphism shown in males by different size of frontal suture tubercles; shape and punctuation of pronotum and, mainly by shape of inferior apical spur of middle tibiae, shortened and obtusely truncate apically. Aedeagus with elongate paramera, with apical membranous processes exceptionally developed. Epipharynx with more or less straight sides; front margin distinctly sinuate at middle; epitorma conical or drop-shaped; corypha with several stout apical spiculae; pedia with irregularly scattered setae, more densely arranged near apex of corypha, sometimes mixed with few short chaetae; chaetopariae short and moderately dense.

DISTRIBUTION. Holarctic region.

Agoliinus congregatus (Mannerheim, 1853) **n. comb.** (figs 337-339, 340)

Aphodius congregatus Mannerheim, 1853: 219

Aphodius (Agoliinus) congregatus; A. Schmidt, 1913: 162

TYPE LOCALITY: "Ad sinum Woskresensk, peninsulae Kenai" [Alaska].

TYPE DEPOSITORY: Zoologiska Museet, Universitet Helsinki. Helsinki (type not examined).

DESCRIPTION. Length 4-6 mm, elongate, oval, convex, shiny, glabrous. Head with epistome gibbous, sparsely irregularly punctured, frontward subrugose, microreticulate; clypeus distinctly sinuate at middle, widely rounded at sides, quite thinly bordered, border glabrous; genal sutures distinct; genae rounded, bristled, feebly more protruding than eyes. Pronotum convex, moderately shiny, alutaceous, with double sparse and irregularly scattered punctation; sides almost parallel near base and distinctly bordered; hind angles obtusely truncate; base bisinuate, distinctly bordered. Scutellum wide, triangular, microreticulate, with few punctures scattered near base. Elytra convex, oval-elongate; striae fine, superficial, strongly punctured and distinctly crenulate; interstices flat, with sparse and fine punctation; epipleura cariniform at shoulder. First segment of hind tarsi longer than superior apical spur of tibia and as long as following three combined. Male: tubercles of frontal suture relatively stronger; fore tibiae apical spur shorter and stouter; pronotum transverse; middle tibiae inferior apical spur very short and hooked apically. Female: tubercles of frontal suture relatively weaker; pronotum narrowed anteriorly; front tibiae apical spur elongate and slender; middle tibiae inferior apical spur distinctly shorter than superior one but regularly acuminate toward apex.

DISTRIBUTION. Western U.S.A. (from California to Alaska) and Western Canada.

Genus *AGOLIUS* Mulsant & Rey, 1870 **stat. nov.**

Aphodius (Acrossus) fraction Agolius Mulsant & Rey, 1870b (1869): 472

Aphodius (Calaphodius) Reitter, 1892: 228; G. Dellacasa, 1983: 131 (as synonym of *Agolius*)

Aphodius (Agolius); Reitter, 1892: 240; G. Dellacasa, 1983: 131

TYPE SPECIES: *Aphodius mixtus* A. Villa & G. B. Villa, 1833 (junior synonym of *Aphodius abdominalis* Bonelli, 1812) (subsequent designation: Reitter, 1892).

DESCRIPTION. Medium size species (length 5-10 mm), oval-elongate, convex, more or less shiny, glabrous. Piceous-blackish; elytra brownish or yellowish with blackish spots. Head somewhat small, epistome moderately convex, irregularly punctured; clypeus truncate anteriorly, rounded or subangulate at sides, quite bordered, border glabrous; genae ciliate, usually more protruding than eyes; latter small; frontal suture not or faintly tuberculate. Pronotum convex, with double, irregular, more or less coarse and dense punctation; sides bordered as well as obtusely rounded hind angles, the border widened till shoulder level only; base not bordered. Scutellum widely triangular, punctured. Elytra convex, somewhat widened posteriorly; striae deep and more or less distinctly crenulate; interstices flat or nearly flat, sparsely punctured, shortly pubescent laterally and toward apex. Fore tibiae distally tridentate and proximally distinctly serrulate at outer margin, upper side nearly smooth; apical spur elongate till half of second tarsal segment only. Middle and hind tibiae with strong transverse carinae on outer face and apically fimbriate with spinules rather elongate and irregularly unequal. First segment of hind tarsi as long as superior apical spur of tibiae. Pygidium with rather elongate discal setae; its apical margin fimbriate with moderately elongate straight cilia. Sexual dimorphism shown in males by shape and punctation of pronotum and by middle tibiae inferior apical spur, shortened and truncate apically. Aedeagus large, paramera apically with a characteristic membrane curved nearly at right angle. Epipharynx rounded at sides, barely sinuate at front margin; epitorma elongate, drop-shaped; corypha barely protruding beyond front margin and with strong, elongate apical spiculae; pedia with setae more dense near corypha; chaetopariae short and dense.

DISTRIBUTION. Western Palearctic region.

REMARKS. On the basis of epipharyngeal and aedeagal features, one of us (G. Dellacasa, 1983) moved *Aphodius bonvouloiri* from subgenus *Calaphodius* Reitter, 1892 to subgenus *Agolius* Mulsant & Rey, 1870. Because *Aphodius bonvouloiri* Harold 1860 was the type species of *Calaphodius* (by Reitter's original designation), latter became junior synonym of *Agolius* Mulsant & Rey, 1870 [type species *Aphodius mixtus* A. & G. B. Villa, 1833 (= *Aphodius abdominalis* Bonelli, 1812)]

Agolius abdominalis (Bonelli, 1812) **n. comb.** (figs 341, 344-346)

Aphodius abdominalis Bonelli, 1812: 155

Aphodius mixtus A. Villa & G. B. Villa, 1833: 34

Aphodius (*Acrossus* fraction *Agolius*) *mixtus*; Mulsant & Rey, 1870b (1869): 473

Aphodius (*Acrossus*) *mixtus*; Mulsant & Rey, 1871 (1870): 474

Aphodius (*Agolius*) *mixtus*; Reitter, 1892: 241

Aphodius (*Agolius*) *abdominalis*; G. Dellacasa, 1983: 133; G. Dellacasa, 1987: 67 (neotype)

TYPE LOCALITY: Piccolo San Bernardo, Alpi Cozie [Italy].

TYPE DEPOSITORY: Museo regionale di Scienze naturali. Turin (neotype male examined).

DESCRIPTION. Length 5-6 mm, oblong, moderately convex, feebly shiny, glabrous. Piceous; head clypeal margin, pronotum sides, base and apex of elytra reddish, abdomen testaceous; sometimes elytra reddish with two oblique binds blackish more or less widened and often joined each other; or head and pronotum piceous, and elytra

apically pale reddish; or quite piceous. Head somewhat small, feebly shiny; epistome moderately convex, coarsely densely punctured; clypeus subtruncate anteriorly, widely rounded at sides, quite thinly bordered; genae obtusely rounded, elongately ciliate, more protruding than eyes; frontal suture barely tuberculate. Pronotum rather shiny, convex, somewhat depressed near hind angles; with double, coarse and dense punctation; sides thinly bordered, straight or subsinuate before hind angles; latter widely rounded; base not bordered. Scutellum wide, triangular, curved at sides, acuminate apically; coarsely and nearly quite punctured, microreticulate. Elytra convex, oval, feebly shiny; with strong epipleural carina; striae deep, strongly punctured, feebly but distinctly crenulate; interstices nearly flat, microreticulate, finely and sparsely punctured. Fore tibiae with inferior denticulate carina, its median tooth strong. Superior apical spur of hind tibiae as long as first tarsal segment; latter as long as following two combined. Both sexes normally winged. Male: inferior apical spur of middle tibiae stout and truncate apically; head relatively wider and rounded; elytral interstices quite flat; pronotum strongly transverse; colour relatively darker, usually piceous. Female: middle tibiae inferior apical spur slender and acuminate apically; head narrower, clypeus subtruncate; elytral interstices feebly convex; pronotum narrowed frontward; colour relatively paler, reddish or yellowish.

DISTRIBUTION. Mountains of Central and Southern Europe.

Genus *AGRILINUS* Mulsant & Rey, 1870

Aphodius (*Aphodius* groupe *Agrilinus*) Mulsant & Rey, 1870b (1869): 419

Aphodius (*Agrilinus*); Mulsant & Rey, 1871 (1870): 474; Reitter, 1892: 195; G. Dellacasa, 1983: 139

Aphodius (*Pseudolimarus*) Balthasar, 1931: 217 (**n. syn.**)

Bodilopsis Ádám, 1994: 5 (**n. syn.**)

Agrilinus; Ádám, 1994: 13

TYPE SPECIES: *Scarabaeus ater* DeGeer, 1774 (subsequent designation: Reitter, 1892).

DESCRIPTION. Medium size species (length 4-7 mm), convex, dull or shiny, glabrous. Blackish or piceous, sometimes elytra reddish or testaceous with or without piceous spots. Head with epistome convex, usually subrugosely punctured, often with transverse arcuate median carina; clypeus more or less strongly sinuate at middle, rounded or denticulate at sides, quite bordered, border glabrous; genae elongately and sparsely ciliate, more protruding than eyes; latter small; frontal suture trituberculate. Pronotum convex; distinctly, coarsely either regularly or irregularly punctured; hind angles either rounded or obtuse; base distinctly bordered. Scutellum widely triangular, coarsely punctured, usually distinctly microreticulate. Elytra convex, often widened posteriorly; denticulate or not at shoulder; striae more or less deep and crenulate; interstices flat or convex, punctured. Fore tibiae distally tridentate and proximally serrulate at outer margin, upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules short and equal. Pygidium fringed with elongate cilia. Sexual dimorphism shown in males by pronotum not narrowed frontward and less densely punctured on disc. Aedeagus short with paramera regularly elongate and more or less curved apically. Epipharynx widely rounded at sides; epitorma drop-

shaped; corypha with stout apical spiculae, central ones more elongate and strongly protruding beyond front margin; pedia pubescent with few short chaetae irregularly scattered; chaetopariae dense and moderately elongate.

DISTRIBUTION. Palearctic and Oriental region.

REMARKS. Balthasar (1931) described the subgenus *Pseudolimarus* and its type species (by monotypy) *Aphodius jugurtha* on a sole specimen from "Ghardimaou, Tun.". The study of the holotype preserved in Balthasar's collection allows to establish doubtless the new synonymy of this taxon versus *Agrilinus ibericus* (Harold, 1874). Therefore *Pseudolimarus* has to be considered a junior synonym of *Agrilinus*.

Ádám (1994) described the genus *Bodilopsis* ascribing to it two species at that time pertaining to *Aphodius* subgenus *Agrilinus*, i.e.: *Aphodius sordidus* (Fabricius, 1775) (type species by original designation) and *Aphodius scybalarius* (Fabricius, 1781) [= *Aphodius rufus* (Moll, 1782)]. The diagnosis is quite insufficient for defining a genus-group taxon because it does not report any of the morpho-anatomical characteristics currently adopted in modern Aphodiinae taxonomy as well as any discriminating character. Therefore we are herein compelled to consider *Bodilopsis* synonym of *Agrilinus*.

Agrilinus ater (DeGeer, 1774) (figs 342, 347-349)

Scarabaeus ater DeGeer, 1774: 270

Aphodius ater; Mulsant, 1842: 195

Aphodius (Agrilinus) ater; Mulsant & Rey, 1871 (1870): 474

Agrilinus ater; Ádám, 1994: 13

TYPE LOCALITY: "Suecia" [Sweden] (conventional).

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 4.5-6 mm, stout, subparallel, strongly convex, glabrous; head and pronotum shiny, elytra strongly alutaceous. Black, sometimes elytra reddish. Head with epistome subrugosely punctured and with a feeble transverse carina; clypeus subsinuate at middle, widely rounded at sides; genae rounded, barely more protruding than eyes; frontal suture trituberculate, median tubercle conical and acuminate, at least in males. Pronotum strongly convex; doubly, subregularly, densely punctured, larger punctures subconfluent at sides, moreover macroscopical punctures mixed among larger and smaller ones; hind angles rounded; base distinctly bordered. Scutellum alutaceous. Elytra strongly convex, subparallel-sided; epipleural carina distinctly denticulate at shoulder; striae shiny, fine, superficial on disc, a bit more deep apically, distinctly crenulate; interstices flat, strongly microreticulate, alutaceous or nearly dull; finely, superficially, sparsely, barely distinctly punctured throughout. Mesosternum with distinct rather sharp longitudinal carina. Hind tibiae superior apical spur shorter than first tarsal segment; latter somewhat longer than following three combined. Male: tubercles of frontal suture relatively stronger, central one conical and acuminate apically; pronotum transverse, not narrowed frontward, less densely punctured on disc. Female: tubercles of frontal suture relatively weaker, central one blunt apically; pronotum narrowed frontward, more densely punctured on disc.

DISTRIBUTION. Palearctic and Oriental region.

Genus *AHERMODONTUS* Báguena, 1930

Ahermodontus Báguena, 1930: 315; Báguena, 1959: 214 (as synonym of *Ammoecius*); Balthasar, 1964: 475

Aphodius (*Ahermodontus*); Báguena, 1967: 122

TYPE SPECIES: *Ahermodontus marini* Báguena, 1930 (monotypy).

DESCRIPTION. Apterous species, rather small (length 4-4.5 mm), stout, strongly convex, more or less shiny, glabrous. Black, clypeal margin and legs brownish-red; antennal club testaceous. Head wide, cupoliform; epistome finely or coarsely punctured, anteriorly with strong transverse carina; clypeus quite thinly bordered, border glabrous; quadridentate, inner teeth stronger than outer ones, all teeth distinctly upturned; frontal suture nearly faint or only laterally distinctly impressed, not at all tuberculate; genae obtusely rounded, rather shortly ciliate, more protruding than eyes; latter small. Pronotum widely transverse, strongly convex, doubly punctured; larger punctures sparser on disc; finely bordered at front and at lateral margins; hind angles obtusely rounded; base bordered or not bordered. Scutellum very small, regularly triangular, feebly convex, unpunctured. Elytra convex, very shiny, oval-elongate; striae deep, strongly punctured, feebly or strongly crenulate; interstices flat or convex, sometimes apically subcarinate, sparsely finely punctured; shoulder strongly denticulate. Fore tibiae distally tridentate and proximally distinctly serrulate at outer margin, upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with short and equal spinules. Pygidium with rather dense and moderately elongate pubescence, mixed toward apical margin some very elongate and straight setae. Sexual dimorphism shown in males by punctation of pronotum more sparse on disc, by inferior apical spur of mesotibiae strongly shortened and subtruncate apically. Aedeagus with elongate paramera, curved and acuminate apically. Epipharynx widely transverse, feebly bisinuate at front margin; corypha strongly protruding frontwards, apically rounded and sinuate at middle; epitorma campaniform; chaetopariae with rather elongate and densely arranged chaetae; chaetopodia with few strong spines arranged in nearly regular series.

DISTRIBUTION. South-western Palearctic region (Albany, Southern Spain and Spanish Morocco).

Ahermodontus marini Báguena, 1930 (figs 343, 350-352)

Ahermodontus marini Báguena, 1930: 315; Balthasar, 1964: 476

Aphodius (*Ammoecius*) *marini*; Báguena, 1959: 214; Baraud, 1971: 64

Aphodius (*Ahermodontus*) *marini*; Báguena, 1967: 122; M. Dellacasa, 1988a (1987): 159

TYPE LOCALITY: Fuente de Barraix, De Estivella (Valencia) [Spain].

TYPE DEPOSITORY: Báguena collection, Museo de la Universidad de Valencia. Valencia (holotype not examined).

DESCRIPTION. Length about 4 mm, stout, strongly convex, shiny, glabrous. Black, clypeal margin and legs reddish; antennal club testaceous. Head strongly convex,

epistome anteriorly with strong transverse carina, rather quite finely and regularly punctured, punctation somewhat sparser at centre and subrugose laterally; clypeus quadridentate, teeth distinctly upturned; genae obtusely rounded, ciliate, more protruding than eyes; frontal suture very finely impressed, not at all tuberculate. Pronotum transverse, doubly punctured; larger punctures nearly lacking on disc; finely bordered at front and at lateral margins; latter regularly rounded; base not bordered. Scutellum feebly convex, smooth. Elytra oval-elongate; strongly denticulate at shoulder; deeply striate; striae distinctly punctured, not crenulate; interstices nearly flat, very sparsely finely punctured; epipleura strong, distinct till sutural angles. Hind tibiae superior apical spur as long as first tarsal segment; latter longer than following two combined. Male: pronotum relatively less densely punctured on disc; inferior apical spur of middle tibiae strongly shortened and apically subtruncate. Female: pronotum relatively more densely punctured on disc; inferior apical spur of middle tibiae elongate and regularly acuminate apically.

DISTRIBUTION. Southern Spain (Valencia province).

Genus *ALLOBODILUS* Petrovitz, 1963 **stat. nov.**

Aphodius (*Allobodilus*) Petrovitz, 1963b: 640; M. Dellacasa, 1988a (1987): 85

Aphodius (Artengruppe *Dibolus*) Endrödi, 1976: 112

Aphodius (group *Dibolus*); Endrödi & Rakovič, 1981: 53

Aphodius (*Dibolus*); M. Dellacasa, 1988a (1987): 238 (as synonym of *Allobodilus*)

TYPE SPECIES: *Aphodius notabilis* Petrovitz, 1963 (original designation).

DESCRIPTION. Medium size species (length 5.5-6 mm) convex, subcylindrical, shiny, nearly glabrous. Brown-reddish. Head with epistome gibbous, regularly punctured, with median transverse weak carina; clypeus deeply sinuate at middle, acutely bidenticulate at each side of median sinuosity, broadly rounded, not bordered but margin upturned and elongately ciliate laterally; genae angulate, elongately ciliate, strongly prominent; eyes middle sized; frontal suture cariniform, not tuberculate. Pronotum feebly transverse, strongly convex; doubly punctured; lateral margins regularly rounded, thickly bordered, border ciliate; hind angles obtuse; base sharply bordered, ciliate. Scutellum small, triangular, at base wider than first two elytral interstices. Elytra nearly parallel-sided; not denticulate at shoulder; distinctly striate, striae feebly crenulate, the first one not widened toward apex; interstices moderately convex, sparsely, finely punctured, punctures subapically faintly pubescent. Middle and, mainly, hind femora, strongly widened, sparsely punctured on ventral face, punctures piligerous. Fore tibiae stout, with strong distal teeth and proximally distinctly serrulate at outer margin, upper side smooth. Middle and hind tibiae rather widened toward apex and with strong transverse carinae on outer face; apically fimbriate with spinules short and equal. Pygidium with some elongate setae at apical margin. Aedeagus with paramera short and feebly curved apically; tegmen very elongate, digitiform. Epipharynx transverse, widely sinuate at front margin; epitorma drop-shaped; corypha with six apical spiculae; chaetopariae moderately elongate; pedia pubescent and with some stouter chaetae near chaetopariae. Females unknown.

DISTRIBUTION. Austral Afrotropical region.

REMARKS. One of us (Bordat) by thorough study of type material was able to confirm the synonymy of *Aphodius gobabensis* Endrödi, 1976 versus *Aphodius notabilis* Petrovitz, 1963. Therefore the genus-group name *Dibolus* must be considered junior synonym of *Allobodilus* as already stated by M. Dellacasa (1988a: 238).

Allobodilus notabilis (Petrovitz, 1963) **n. comb.** (figs 353, 357-359)

Aphodius (*Allobodilus*) *notabilis* Petrovitz, 1963b: 640

Aphodius (Artengruppe *Dibolus*) *gobabensis* Endrödi, 1976: 112

Aphodius (*Dibolus*) *gobabensis*; M. Dellacasa, 1988a (1987): 238 (as synonym of *notabilis*)

TYPE LOCALITY: "Betschuanaland" [Botswana].

TYPE DEPOSITORY: Muséum d'Histoire naturelle. Geneva (holotype male examined).

DESCRIPTION. Length 5.5-6 mm, subcylindrical, strongly convex, shiny, nearly glabrous. Pale brown-reddish, head and pronotum slightly darker. Head strongly convex, epistome gibbous with weak median transverse carina, rather finely, sparsely and regularly punctured; clypeus enough narrowly, deeply sinuate at middle, acutely bidentulate laterally, denticles distinctly upturned, sides widely rounded, not bordered, margin feebly upturned, elongately ciliate; genae auriculate, bordered, elongately ciliate, more protruding than eyes; frontal suture cariniform, distinctly raised, not tuberculate; front feebly sunk, irregularly punctured toward frontal suture only. Pronotum with greater width near base; doubly rather sparsely punctured; smaller punctures fine and nearly regularly sparse throughout; large punctures, three to five times larger than small punctures, irregularly scattered but lacking on lateral calli; sides regularly curved, thickly bordered, border elongately sparsely ciliate; hind angles obtuse and as well as base sharply thinly bordered; latter ciliate. Scutellum with some small shortly piligerous punctures on basal half only. Elytra elongate, parallel-sided at two basal thirds, somewhat broadened toward apex; not denticulate at shoulder, rather deeply striate; striae distinctly punctured, feebly crenulate; interstices moderately convex, sparsely finely punctured, preapically punctures nearly imperceptibly pubescent. Hind tibiae superior apical spur nearly as long as first tarsal segment; latter as long as following three combined. Female unknown.

DISTRIBUTION. Botswana and Namibia (Kalahari and Namaqualand deserts).

REMARKS. Besides the two type specimens of *notabilis* Petrovitz, 1963 and *gobabensis* Endrödi, 1976 (TYPE LOCALITY: Mata Mata, Gemsbok National Park, Kalahari; TYPE DEPOSITORY: Transvaal Museum, Pretoria; holotype male examined), one of us (Bordat) had the opportunity to examine another male specimen from Rietfontein (Namibia) preserved in Paris Museum.

Genus *ALOCODERUS* A. Schmidt, 1913

Aphodius (*Alocoderus*) A. Schmidt, 1913: 127; Balthasar, 1964: 82; G. Dellacasa, 1983: 152
Alocoderus; Paulian, 1942: 70; Ádám, 1994: 13

Aphodius (*Aphodius* Artengruppe *Alocoderus*); Endrödi, 1960b: 98

Aphodius (Artengruppe *Alocoderus*); Endrödi, 1964a: 257

Aphodius (group *Alocoderus*); Endrödi & Rakovič, 1981: 51

TYPE SPECIES: *Aphodius semenowi* Reitter, 1887 (subsequent designation: Paulian, 1942).

DESCRIPTION. Medium or large size species (length 5-12 mm), elongate, feebly shiny or rather dull, nearly glabrous, more or less strongly convex. Testaceous, pronotum disc with cordiform brownish spot; seldom quite brownish or piceous. Head with epistome moderately gibbous, more or less densely punctured; clypeus sinuate at middle, rounded at sides, quite thickly bordered, border glabrous; genae obtusely rounded, ciliate, more protruding than eyes; latter small; frontal suture distinct and usually trituberculate. Pronotum transverse, irregularly punctured; hind angles obtusely rounded; quite distinctly bordered. Scutellum small, triangular, punctured. Elytra usually subcylindrical; striae superficial or deep; interstices convex or nearly flat, strongly or finely punctured. Fore tibiae distally tridentate and proximally faintly serrulate at outer margin, upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with short and equal spinules. Pygidium with few elongate and straight discal setae; its apical margin rather densely and elongately ciliate. Sexual dimorphism shown in males by more strong tubercles of frontal suture, different shape of fore tibiae apical spur, less dense punctation of pronotum disc. Aedeagus with elongate paramera, widely rounded apically; in lateral view strongly plumped basally. Epipharynx feebly sinuate at front margin; epitorma conical, widened basally; corypha with dense and elongate spiculae, the central ones protruding beyond frontal margin; pedia strongly pubescent and with several chaetae irregularly mixed; chaetopariae rather short and densely arranged.

DISTRIBUTION. Palearctic, Oriental and Afrotropical region.

Alocoderus semenowi (Reitter, 1887) (figs 354, 360-362)

Aphodius semenowi Reitter, 1887: 220

Aphodius (*Agrilinus*) *semenowi*; Reitter, 1892: 195

Aphodius (*Alocoderus*) *semenowi*; A. Schmidt, 1913: 127; Balthasar, 1964: 85; G. Dellacasa, 1990: 169 (male description)

Alocoderus semenowi; Paulian, 1942: 70

TYPE LOCALITY: Amdo [Tibet].

TYPE DEPOSITORY: Zoologicheskij Institut R. A. N. St. Petersburg (lectotype female examined).

DESCRIPTION. Length 8-10 mm, elongate, shiny, strongly convex, glabrous. Piceous, rarely elytra yellowish. Head with epistome gibbous, distinctly irregularly punctured; clypeus feebly sinuate at middle, widely rounded at sides; genae obtusely rounded, ciliate, more protruding than eyes; median tubercle of frontal suture strong and bilobate apically, lateral ones weak and transverse. Pronotum convex, transverse, with double, irregular and rather sparse punctuation; quite bordered; lateral margins ciliate; hind angles obtusely rounded. Scutellum widely triangular, microreticulate, finely punctured. Elytra elongate, strongly convex, subcylindrical; striae fine, superficially punctured, not crenulate; interstices wide, flat, finely but distinctly punctured, punctures arranged in

two, more or less regular, longitudinal rows near striae; finely microreticulate so rather shiny, with few extremely short and sparse hairs apically. Middle and hind tibiae with very short and equal apical spinules. First segment of hind tarsi nearly as long as superior apical spur of tibia and longer than following two combined. Male: median tubercle of frontal suture relatively stronger; pronotum transverse, not narrowed anteriorly, rather smooth on disc; fore tibiae apical spur stout and apically obtuse. Female: median tubercle of frontal suture relatively weaker; pronotum narrowed frontward and relatively more uniformly punctured; fore tibiae apical spur slender and apically acuminate.

DISTRIBUTION. Nepal, Tibet, Turkestan and China.

Genus *AMIDORUS* Mulsant & Rey, 1870

Aphodius (*Amidorus* groupe *Amidorus*) Mulsant & Rey, 1870b (1869): 489

Aphodius (*Amidorus*); Mulsant & Rey, 1871 (1870): 474; Reitter, 1892: 213; Balthasar, 1964: 287; G. Dellacasa, 1983: 155

Amidorus; Paulian, 1942: 88; Ádám, 1994: 14

Aphodius (Artengruppe *Amidorus*); Endrödi, 1964a: 272

Aphodius (group *Amidorus*); Endrödi & Rakovič, 1981: 54

TYPE SPECIES: *Scarabaeus obscurus* Fabricius, 1792 (subsequent designation: Reitter, 1892).

DESCRIPTION. Medium size species (length 4-8 mm), convex, more or less dull, glabrous or nearly glabrous. Blackish; elytra often more or less dark reddish, rarely yellowish. Head shiny; epistome moderately convex, strongly punctured; clypeus feebly sinuate at middle, rounded at sides, quite distinctly bordered, border glabrous; genae ciliate, more protruding than eyes; latter small; frontal suture not or faintly tuberculate, Pronotum coarsely densely punctured, bristled at sides; base distinctly bordered. Scutellum small, triangular, punctured. Elytra convex; striae rather narrow, superficial, feebly or not crenulate; interstices irregularly superficially nearly indistinctly punctured, sometimes punctures longitudinally confluent, usually strongly microreticulate so rather dull, with extremely short lateral and preapical pubescence. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side with few small punctures irregularly scattered. Middle tibiae inferior apical spur regularly acuminate toward apex in both sexes. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules elongate and irregularly unequal. Pygidium with few straight discal setae; its apical margin finely, densely and elongately ciliate. Sexual dimorphism shown in males mostly by shape and punctation of pronotum and shape of fore tibiae apical spur. Aedeagus with short, apically showy membranous paramera. Epipharynx rounded at sides, sinuate at anterior margin; epitorma drop-shaped; corypha with protruding spiculae, the two central ones longer; pedia densely pubescent with several short chaetae irregularly mixed; chaetopariae dense and elongate.

DISTRIBUTION. Palearctic region.

Amidorus obscurus (Fabricius, 1792) (figs 355, 363-365)

Scarabaeus obscurus Fabricius, 1792: 25

Aphodius obscurus; Erichson, 1848: 853

Amidorus obscurus; Paulian, 1942: 88

Aphodius (*Amidorus*) *obscurus*; Reitter, 1892: 217; Landin, 1956a: 214 (lectotype designation)

TYPE LOCALITY: "Anglia" [Great Britain].

TYPE DEPOSITORY: Zoological Museum. Kiel (lectotype not examined).

DESCRIPTION. Length 6-8 mm, oval-oblong, moderately convex, rather dull, nearly glabrous. Blackish; sometimes elytra reddish or, rarely, yellowish. Head with epistome rather convex, shiny, enough coarsely punctured; clypeus feebly sinuate at middle, obtusely rounded at sides, quite thinly bordered; genae ciliate, feebly auriculate, obtusely rounded, more protruding than eyes; frontal suture faintly trigibbous. Pronotum convex, rather shiny, enough coarsely densely and irregularly punctured; sides bordered, sparsely bristled and feebly sinuate before hind angles; latter obtusely rounded; base thinly bordered. Scutellum widely triangular, shiny, nearly quite punctured. Elytra moderately convex, oval, with extremely short and sparse subapical pubescence; striae superficial, shiny, nearly faintly punctured, not crenulate; interstice flat, strongly microreticulate so rather dull, sparsely superficially irregularly punctured, punctures somewhat longitudinally confluent. First segment of hind tarsi as long as superior apical spur of tibia and as long as following three combined. Male: fore tibiae apical spur short, stout and curved downward, pronotum not narrowed frontward and relatively more sparsely and superficially punctured. Female: fore tibiae apical spur slender and acuminate; pronotum narrowed frontward and relatively more densely and strongly punctured.

DISTRIBUTION. Palearctic region.

Genus *AMMOECIUS* Mulsant, 1842

Ammoecius Mulsant, 1842: 302; Paulian, 1942: 25; Ádám, 1994: 13

Aphodius (*Ammoecius*); Reitter, 1892: 183; G. Dellacasa, 1983: 164

Aphodius (secção *Digonorhinus*); Seabra, 1909: 12 (**n. syn.**)

Aphodius (Artengruppe *Ammoecius*); Endrödi, 1964a: 105

Aphodius (group *Ammoecius*); Endrödi & Rakovič, 1981: 42

TYPE SPECIES: *Scarabaeus elevatus* Olivier, 1789 (monotypy).

DESCRIPTION. Small or medium size species (length 3-10 mm), stout or suboval, strongly convex, shiny, glabrous. Black, sometimes elytra reddish, seldom quite reddish. Head cupuliform; epistome punctured, rarely frontward subrugose, always with distinct transverse carina; clypeus usually sinuate at middle, either denticulate or angulate at sides, bordered, border glabrous; genae obtusely rounded, ciliate, more protruding than eyes; latter small; front without any trace of tubercles. Pronotum strongly convex, sparsely or densely punctured; bordered at sides and usually at base, seldom at front margin too. Scutellum small, triangular, punctured. Elytra strongly convex, widened posteriorly, rarely parallel-sided; striae deep or superficial; interstices flat, feebly

convex, sometimes distinctly convex apically. Fore tibiae distally tridentate and proximally serrulate at outer margin, upper side with few large superficial punctures irregularly scattered. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules short and equal. Pygidium with fine, rather sparse, short and straight pubescence; its apical margin with dense and moderately elongate cilia. Sexual dimorphism shown in males by more evident epistomal carina and less dense punctation on pronotal disc. Aedeagus with paramera very elongate, apically widened, sinuate or abruptly narrowed; sometimes with membranous processes. Epipharynx distinctly sinuate at front margin; corypha strongly protruding beyond front margin and distinctly sinuate apically; epitorma wide, drop-shaped; pedia with sparse, stout elongate chaetae, anterior ones hooked; chaetopariae dense and very elongate.

DISTRIBUTION. Palearctic, Oriental (?) and Southern Afrotropical region.

Ammoecius elevatus (Olivier, 1789) (figs 356, 370-372)

Scarabaeus elevatus Olivier, 1789: 89

Ammoecius elevatus; Mulsant, 1842: 303

Aphodius (*Ammoecius*) *elevatus*; Reitter, 1892: 183

TYPE LOCALITY: Provence [France]

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 5-7 mm, oval elongate, strongly convex, shiny, glabrous. Shiny black, sometimes quite or only ventrally reddish. Head with epistome rugosely punctured anteriorly, nearly smooth on disc, finely sparsely punctured at sides, transversely strongly carinate; clypeus widely distinctly sinuate at middle, subdenticulate at sides; genae more protruding than eyes; frontal line obsolete. Pronotum strongly convex, doubly punctured, larger irregularly sparse punctures mixed with denser, fine and superficial ones; sides nearly straight, bordered; hind angles obliquely truncate; base bisinuate and thinly bordered. Scutellum triangularly elongate, smooth. Elytra strongly convex, feebly widened posteriorly, rounded apically; shoulder not denticulate but distinctly carinate; striae with punctures rather far from each other, distinctly crenulate; interstices nearly flat, very finely and sparsely punctured. First segment of hind tarsi shorter than superior apical spur of tibia and shorter than following three combined. Male: disc of pronotum with fine punctation only. Female: disc of pronotum with fine punctures mixed with some larger ones.

DISTRIBUTION. South-western Palearctic region [Portugal, Spain, Southern France, Italy (Western Liguria only), Mediterranean Africa, Morocco].

Genus *ANOMALUROBIUS* Paulian, 1952

Anomalurobius Paulian in Delamare Deboutteville & Paulian, 1952: 102

TYPE SPECIES: *Anomalurobius eburneus* Paulian, 1952 (monotypy).

EX ORIGINAL DESCRIPTION. "[small] size species [length 4 mm], glabrous, [shiny]. [Brown-blackish; elytra brown-reddish]. Head [with epistome] feebly gibbous, clypeus bidenticulate, denticles acute; genae auriculate, strongly more protruding than eyes.

Pronotum without grooves nor impressions on disc, mostly frontward flattened; lateral margins with feeble border; hind angles sinuate; base bordered. Scutellum narrow and elongate, parallel-sided at base. Elytra quite covering pygidium, strongly convex, greater convexity behind elytral half; apical declivity abrupt, with transverse impression simulating that interstices are nearly callose at impression level; epipleural fold fine but complete; striae ten, distinct, free till apex. Fore tibiae slender and parallel, apical truncation oblique, three marginal outer teeth spaced and, mostly the proximal one, rather feeble; proximally finely serrulate at outer margin; their tarsi very slender and the apical spur distally curved. Middle and hind tibiae with feebly transverse thorny carinae on outer face; fimbriate with apical subequal spinules; their tarsi slender and with fine claws; first segment of hind tibiae nearly as long as following ones combined".

DISTRIBUTION. Western Afrotropical region (Ivory Coast)

PAULIAN'S REMARKS. "Genus isolated by elytral sculpture, by head and fore tibiae shape".

Anomalurobius eburneus Paulian, 1952

Anomalurobius eburneus Paulian in Delamare Deboutteville & Paulian, 1952: 102

TYPE LOCALITY: Le Banco (Ivory Coast).

TYPE DEPOSITORY: unknown to authors; type probably lost (cfr. remarks).

EX ORIGINAL DESCRIPTION. "Length 4 mm. Body shiny, but very finely microreticulate, brownish-red, anteriorly brownish-black the margins excepted; second elytral interstice paler. Head without frontal suture, feebly gibbous at centre; sides sinuate at the joining of clypeal margin with genae; clypeus straight between anterior spaced denticles; outer angles of genae rounded, their posterior margin oblique; punctation rather fine and few dense. Pronotum distinctly transverse, doubly densely punctured, fine and large punctures throughout scattered; sides nearly straight but sinuate before hind angles; base faintly angulate at middle, strongly bordered. Scutellum rugose. Elytra with small humeral spine; sutural interstice tectiform, other ones distinctly convex, progressively narrower and more raised toward apex; striae distinct and rather fine, with fine, spaced punctures, which become stronger outward, interstices at most with very fine, sparse punctures. Abdomen rugose, punctured and pubescent".

DISTRIBUTION. The taxon is recorded from type locality only.

REMARKS. The type specimen was not found in the collections of Paris Museum where it should have been and no figures, which could complete the diagnosis of the taxon, supplied the original description. The unique specimen was collected in August 1945, into a burrow of *Anomalurus* (flying squirrel) being inside a cavity of an old decaying tree trunk. For this taxon no further collecting records are known which means an irremediable loss for generic and specific diagnoses.

Genus *ANOMIUS* Mulsant & Rey, 1870 **stat. nov.**

Aphodius (*Anomius* section *Anomius*) Mulsant & Rey, 1870b (1869): 506

Aphodius (*Anomius*); Mulsant & Rey, 1871 (1870): 474; Reitter, 1892: 214 (as synonym of

Amidorus); A. Schmidt, 1922: 232 (as synonym of *Pseudagolius*); Clément, 1962: 44; G. Dellacasa, 1983: 169

TYPE SPECIES: *Aphodius castaneus* Illiger, 1803 (subsequent designation: Clément, 1962)

DESCRIPTION. Medium size species (length 5-7 mm), elongate, moderately convex, usually shiny, glabrous. More or less dark brownish. Head with epistome moderately convex, punctured; clypeus sinuate at middle, rounded at sides, thickly bordered, border glabrous; genae ciliate, more protruding than eyes; latter rather small; frontal suture not tuberculate. Pronotum convex, more or less regularly punctured, quite bordered; lateral margins sparsely ciliate; hind angles distinct. Scutellum small, triangular. Elytra usually shiny and moderately convex; striae fine; interstices flat or feebly convex, more or less superficially microreticulate, punctured. Fore tibiae distally tridentate and proximally serrulate at outer margin, upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules elongate and progressively unequal. Pygidium with numerous, moderately elongate and straight discal setae; its apical margin rather densely and elongately ciliate. Sexual dimorphism shown in males mostly by different shape of fore tibiae apical spur. Aedeagus with paramera distinctly curved and elongately membranous apically. Epipharynx with corypha elongate, bifid apically and strongly protruding beyond front margin; latter distinctly sinuate; epitorma drop-shaped; pedia mostly glabrous, only anteriorly, near the apex of epitorma, densely and irregularly pubescent, moreover with several elongate chaetae serially arranged; chaetopariae stout, dense and moderately elongate; apophobae short, sparsely and irregularly scattered.

DISTRIBUTION. South-western Palearctic region.

Anomius castaneus (Illiger, 1803) **n. comb.** (figs 366, 373-375)

Aphodius castaneus Illiger, 1803: 194

Aphodius (*Anomius* section *Anomius*) *castaneus*, Mulsant & Rey, 1870b (1869): 507

Aphodius (*Anomius*) *castaneus*, Mulsant & Rey, 1871 (1870): 474; Clément, 1962: 45; Petrovitz, 1971a: 174

Aphodius (*Amidorus*) *unicolor* Olivier *sensu* Reitter, 1892: 214

Aphodius (*Amidorus*) *castaneus*; d'Orbigny, 1896a: 223

Aphodius (*Pseudagolius*) *castaneus*; A. Schmidt, 1913: 151

Aphodius (*Pseudacrossus*) *castaneus*; Balthasar, 1964: 311

TYPE LOCALITY: Portugal (conventional).

TYPE DEPOSITORY: Zoologisches Museum, Humboldt Universität. Berlin (type not examined).

DESCRIPTION. Length 5-6.5 mm, oblong, moderately convex, shiny, glabrous. Chestnut brown. Head with epistome feebly gibbous, moderately and rather regularly punctured; clypeus distinctly sinuate at middle, rounded at sides, quite bordered, border distinctly upturned; genae obtusely rounded, elongately ciliate, distinctly more protruding than eyes; frontal suture finely impressed, not tuberculate. Pronotum shiny, convex, nearly quite regularly punctured, punctation moderately dense, more coarse at sides; latter feebly rounded, elongately ciliate; hind angles rounded, quite thinly bordered. Scutellum

triangularly widened, punctured on basal half, smooth apically. Elytra convex, feebly inward sinuate after shoulder and feebly widened posteriorly, shiny; epipleurae sparsely haired at sides, glabrous at apical margin; striae moderately deep, distinctly crenulate; interstices feebly convex on disc, more strongly toward apex, finely microreticulate, sparsely moderately punctured. First segment of hind tarsi shorter than superior apical spur of tibiae ad as long as following three combined. Male: fore tibiae apical spur flat, parallel-sided, truncate apically; middle tibiae inferior apical spur stout, widened apically, somewhat inward hooked; pronotum regularly convex, not narrowed frontward, relatively more sparsely punctured. Female: fore tibiae apical spur slender and regularly acuminate; middle tibiae inferior apical spur short but regularly acuminate; pronotum relatively less convex, narrowed frontward and more densely punctured.

DISTRIBUTION. Italy (Sardinia and Sicily only), Portugal, Spain, Mediterranean Africa, Morocco.

Genus *APARAMMOECIUS* Petrovitz, 1958 **stat. nov.**

Aphodius (*Aparammoecius*) Petrovitz, 1958a: 138

Aphodius (*Paremadus*) Nakane, 1967: 4; Stebnicka, 1994: 77 (as synonym of *Aparammoecius*)

TYPE SPECIES: *Aphodius isaburoi* Nakane, 1956 (subsequent designation: Stebnicka, 1994).

DESCRIPTION. Small species (length 4-5 mm), oval-elongate, strongly convex, shiny, glabrous. Blackish, sometimes elytra more or less widely reddish or yellowish. Head with epistome gibbous, doubly coarsely punctured; clypeus slightly sinuate at middle, widely rounded at sides, thinly bordered, border glabrous; genae obtuse, faintly ciliate, more protruding than eyes; latter medium size; frontal suture distinct, not tuberculate. Pronotum transverse; doubly coarsely, rather irregularly punctured, before basal margin deeply grooved, the groove with a belt of large, coarse and contiguous punctures; sides thinly bordered, distinctly sinuate before hind angles; latter widely truncate and inward sinuate; base sharply bordered. Scutellum small, triangular. Elytra oval-elongate; distinctly denticulate at shoulder; crenato-striate; interstices flat, sparsely finely punctured. Fore tibiae with three distal teeth moderately acuminate and proximally finely serrulate at outer margin; upper side very finely and sparsely punctured. Middle and hind tibiae with rather feeble transverse carinae on outer face, apically fimbriate with spinules elongate and irregularly unequal. Pygidium sparsely and very shortly pubescent. Sexual dimorphism shown in males by fore tibiae relatively more slender and elongate; pronotum more transverse and less densely punctured on disc; inferior apical spur of middle tibiae extremely shortened. Aedeagus with rather elongate paramera, rounded and feebly curved apically. Epipharynx with anterior margin feebly bisinuate and widely rounded at sides; epitorma campaniform; corypha with strong apical spiculae moderately protruding beyond front margin; pedia densely pubescent and with several elongate chaetae irregularly mixed; chaetopariae strong, moderately elongate and densely arranged.

DISTRIBUTION. Palearctic and Oriental region.

REMARKS. We herein accept with many doubts the synonymy of *Paremadus* Nakane, 1967 versus *Aparammoecius* Petrovitz, 1958 proposed by Stebnicka (1994). The type species of the genus *Aparammoecius* - viz. *Aphodius isaburoi* Nakane, 1956 - was designated by said author in force of what stated by ICZN, art. 67.12.

Aparammoecius isaburoi (Nakane, 1956) **n. comb.** (figs 367, 376-378)

Aphodius (*Emadus*?) *isaburoi* Nakane, 1956: 119

Aphodius (*Paremadus*) *isaburoi*; Nakane, 1967: 4

Aphodius (*Aparammoecius*) *isaburoi*; Stebnicka, 1994: 77

TYPE LOCALITY: Nara, Yamato, Honshu (Japan).

TYPE DEPOSITORY: Nakane collection. Kagoshima (type not examined).

DESCRIPTION. Length 4-4.5 mm, oval-elongate, strongly convex, shiny, glabrous. Blackish, clypeal, pronotal and elytral margins more or less widely reddish; legs brown-reddish; antennal club blackish. Head with epistome moderately gibbous, finely microreticulate, doubly coarsely punctured, larger punctures somewhat confusedly subrugose laterally; clypeus feebly sinuate at middle, widely rounded at sides, distinctly bordered, border glabrous; genae obtusely rounded, very shortly ciliate, more protruding than eyes; frontal suture distinctly impressed at middle, slightly raised laterally, not tuberculate. Pronotum transverse, strongly convex, doubly punctured; punctation rather irregularly scattered; large punctures, five to six times larger than small punctures, denser on sides; before base with a transverse belt of large, deep and contiguous punctures; anterior angles rounded; sides nearly straight, thinly bordered, deeply sinuate before hind angles; latter thickly bordered, distinctly truncate and inward sinuate; base feebly bisinuate, distinctly sharply bordered. Scutellum unpunctured, at base as large as two first elytral interstices. Elytra strongly convex, slightly broadened posteriorly; distinctly denticulate at shoulder; rather deeply striate; striae crenulate; interstices flat on disc, strongly convex toward apex, finely sparsely punctured. Hind tibiae superior apical spur as long as half of first tarsal segment; latter as long as following three combined. Male: head relatively more transverse; frontal suture more distinct; pronotum not narrowed frontward and more sparsely punctured on disc; fore tibiae more slender and elongate; inferior apical spur of middle tibiae extremely shortened. Female: head relatively less transverse; frontal suture nearly faint; pronotum slightly narrowed frontward and more densely punctured on disc; fore tibiae shorter and stouter; inferior apical spur of middle tibiae not particularly shortened.

DISTRIBUTION. Japan.

Genus *APHODAULACUS* W. Koshantschikov, 1911 **stat. nov.**

Aphodius (*Aphodaulacus*) W. Koshantschikov, 1911b: 209; Balthasar, 1964: 209

TYPE SPECIES: *Aphodius turkestanicus* Heyden, 1881 (subsequent designation: Balthasar, 1964).

DESCRIPTION. Small or medium size species (length 3.5-9 mm), oval-elongate, few shiny, moderately convex; head and pronotum glabrous or nearly glabrous, elytra more

or less diffusedly pubescent. Blackish, sides of pronotum and elytra brown-yellowish, latter usually with several blackish spots. Head with epistome feebly gibbous, punctured; clypeus truncate or slightly sinuate at middle, rounded at sides, quite bordered, border glabrous; genae acutely angulate, ciliate, prominent; eyes medium sized; frontal suture distinct. Pronotum feebly transverse, moderately convex, rather sparsely punctured; sides rounded, thickly bordered, border elongately ciliate or glabrous; hind angles nicely distinct, obtusely rounded; base bordered, sometimes border interrupted at middle. Scutellum small, triangularly elongate. Elytra finely striate; striae subcrenulate; interstices nearly flat, punctured; epipleura elongately ciliate. Fore tibiae distally tridentate and proximally distinctly serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with spinules very elongate and strongly irregularly unequal. First segment of hind tarsi as long as following three combined. Pygidium with fine, extremely elongate, straight setae; subapically with a belt of large and elongately setigerous punctures. Sexual dimorphism shown in males by frontal suture weakly trituberculate; head and pronotum relatively wider; elytra quite densely pubescent; inferior apical spur of mesotibiae shortened; superior apical spur of hind tibiae as long as first tarsal segment. Aedeagus with elongate and slender paramera upturned apically. Epipharynx transverse, sinuate at middle of front margin; epitorma drop-shaped; corypha with several elongate apical spiculae; chaetopariae moderately elongate; pedia pubescent with some stouter chaetae nearly serially arranged; tormae slender and very elongate.

DISTRIBUTION. Central and Eastern Palearctic region.

Aphodaulacus turkestanicus (Heyden, 1881) **n. comb.** (figs 368, 383-385)

Aphodius turkestanicus Heyden in Heyden & Kraatz, 1881: 323

Aphodius (Aphodaulacus) turkestanicus; W. Koshantschikov, 1911b: 211

TYPE LOCALITY: "Margelan, Turkestaniae" [Turkmenistan].

TYPE DEPOSITORY: Zoologisches Museum, Humboldt Universität. Berlin (type not examined).

DESCRIPTION. Length 5-8 mm, oval-elongate, moderately convex, more or less shiny; head and pronotum glabrous, elytra more or less diffusedly pubescent. Blackish; lateral margins of pronotum yellowish, elytra brown-yellowish, usually with several blackish spots. Head with epistome feebly gibbous, irregularly punctured; clypeus anteriorly truncate, rounded at sides, quite thickly bordered, border glabrous; genae ciliate, strongly more protruding than eyes; frontal suture distinct. Pronotum feebly transverse; sides thickly bordered, border elongately ciliate; hind angles distinct, obtusely rounded; base thinly bordered. Scutellum distinctly convex, irregularly punctured. Elytra rather finely striate; striae distinctly punctured, slightly crenulate; interstices nearly flat, punctured; epipleura elongately ciliate. Male: head relatively wider with epistome microreticulate and few shiny, finely, superficially, confusedly punctured; genae nearly rectangular but with distal angle obtuse, very elongately ciliate; frontal suture weakly

but distinctly trituberculate; front regularly punctured; pronotum relatively wider, less convex, not narrowed frontward, very finely sparsely punctured, superficially microreticulate so rather shiny, basal border usually interrupted at middle; elytra parallel-sided, interstices flat, roughly punctured, very densely pubescent, pubescence backward curved; fore tibiae relatively slender and more elongate, their outer distal teeth strongly acuminate; middle and hind tibiae relatively more elongate, stouter and diffusely ciliate; inferior apical spur of middle tibiae distinctly shortened; superior apical spur of hind tibiae as long as first tarsal segment. Female: head relatively narrower, more convex, epistome rather densely regularly punctured; genae smaller; pronotum more coarsely punctured, with a median longitudinal areola unpunctured, basal border thicker and complete; elytra regularly oval; interstices faintly convex, only laterally and preapically shortly pubescent; fore tibiae stouter; middle and hind tibiae relatively shorter and less elongately ciliate; middle tibiae inferior apical spur not shortened; hind tibiae superior apical spur distinctly shorter than first tarsal segment.

DISTRIBUTION. Northern Iran, Turkmenistan.

Genus *APHODIELLUS* A. Schmidt, 1913

Aphodius (*Aphodiellus*) A. Schmidt, 1913: 140; Balthasar, 1964: 186; M. Dellacasa, 1988a (1987): 88, 369

Aphodiellus; Paulian, 1942: 83

Aphodius (Artengruppe *Aphodiellus*); Endrödi, 1964a: 271

Aphodius (group *Aphodiellus*); Endrödi & Rakovič, 1981: 54

TYPE SPECIES: *Aphodius impunctatus* Waterhouse, 1875 (monotypy).

DESCRIPTION. Medium size species (length 7-8 mm), elongate, convex, strongly shiny, glabrous. Quite more or less dark brownish. Head with epistome gibbous, faintly punctured distally; clypeus subtruncate or sinuate anteriorly, widely rounded at sides, quite thinly bordered, border glabrous; genae obtusely rounded, ciliate, moderately more protruding than eyes; latter rather small; frontal suture barely distinct, not tuberculate. Pronotum transverse, convex, nearly quite impunctate, only at sides with few large sparse punctures; sides slightly rounded, bordered; hind angles obtusely rounded, base distinctly thinly bordered. Scutellum small, triangular, with straight sides, quite impunctate. Elytra convex, elongate, nearly parallel-sided; striae fine, superficially punctured, not crenulate; interstices flat, faintly sparsely punctured. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules elongate and irregularly unequal. Pygidium with dense, rather elongate and recumbent pubescence; its apical margin very elongately and sparsely ciliate. Sexual dimorphism shown in males mostly by different shape of fore tibiae apical spur. Aedeagus stout, paramera short, apically acuminate. Epipharynx moderately sinuate at front margin; corypha lacking; epitorma reduced, conical, apically with one strong spine; pedia densely pubescent with several strong spines arranged frontward at middle and laterally in two rows.

DISTRIBUTION. Eastern Palearctic and Afrotropical (?) region.

Aphodiellus impunctatus (Waterhouse, 1875) (figs 369, 386-388)

Aphodius impunctatus Waterhouse, 1875: 85

Aphodius (*Aphodiellus*) *impunctatus*; A. Schmidt, 1913: 140

Aphodiellus impunctatus; Paulian, 1942: 83

TYPE LOCALITY: Simabata (Japan).

TYPE DEPOSITORY: Natural History Museum. London (type not examined).

DESCRIPTION. Length 7-8 mm, elongate, moderately convex, subparallel-sided, strongly shiny, glabrous. Dark chestnut-brown, antennae with pale testaceous club. Head wide, epistome slightly gibbous, faintly punctured; clypeus anteriorly subtruncate, widely rounded at sides; genae rounded, shortly scarcely bristled, feebly more protruding than eyes; frontal suture barely distinct, not tuberculate. Pronotum convex, with few large punctures at sides only; sides slightly rounded, strongly bordered, sparsely shortly haired; posterior angles obtusely rounded; base distinctly thinly bordered. Scutellum triangular, quite impunctate. Elytra elongate, moderately convex, epipleurae distinct, stronger at shoulder, nearly parallel-sided; striae superficial, finely densely punctured; interstices flat, faintly punctured. First segment of hind tarsi as long as superior apical spur of tibiae as well as following two combined. Male: fore tibiae apical spur parallel-sided, truncate apically. Female: fore tibiae apical spur slender and apically acuminate.

DISTRIBUTION. Eastern Siberia, China, Japan.

Genus *APHODIOPSIS* Paulian, 1942

Aphodiopsis Paulian, 1942: 123 (Eupariina)

Aphodius (Artengruppe *Aphodiopsis*); Endrödi, 1964a: 197 (Aphodiini)

Aphodius (*Aphodiopsis*); M. Dellacasa, 1988a (1987): 369

TYPE SPECIES: *Aphodiopsis latipes* Paulian, 1942 (original designation).

DESCRIPTION. Small species (length 3-5 mm) oval-elongate, convex, shiny or sericeous, glabrous. Either blackish or more or less pale brownish. Head with epistome feebly gibbous, punctured; clypeus strongly sinuate at middle, more or less strongly angulate at sides, quite bordered, border glabrous; genae obtusely rounded, not ciliate, more protruding than eyes; latter medium sized; frontal suture not tuberculate. Pronotum transverse, doubly punctured; sides nearly straight, thinly bordered; hind angles obliquely truncate and inward more or less strongly sinuate; base distinctly bisinuate, not bordered. Scutellum small, triangular. Elytra oval, with small humeral tooth; striae distinctly punctured; first stria as wide as second apically; interstices flat or feebly convex, sparsely punctured. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side superficially punctured near inner margin only. Middle and hind tibiae with two feeble, sometimes lacking in hind tibiae, carinae on outer face; apically fimbriate with spinules elongate and progressively unequal. Hind tibiae superior apical spur distinctly shorter than first tarsal segment. Pygidium with some straight setae irregularly sparse. Sexual dimorphism shown in males by more strong and usually upturned front angles of clypeus; fore tibiae distinctly widened at inner margin, their apical spur abruptly curved outward; hind tibiae often widely flattened and sometimes lacking of outer transverse carinae.

DISTRIBUTION. Afrotropical region.

REMARKS. Unlike what stated in original description, the scutellum of the type species is not parallel-sided and the length of the specimen is about 4.5 millimetres only. Furthermore Endrödi (1964:197) correctly transferred *Aphodiopsis* from Eupariinae to Aphodiinae as confirmed by our studies of aedeagus and epipharynx.

Aphodiopsis latipes Paulian, 1942 (figs 379, 389-391)

Aphodiopsis latipes Paulian, 1942: 124

Aphodius (Artengruppe *Aphodiopsis*) *latipes*; Endrödi, 1964a: 200

Aphodius (*Aphodiopsis*) *latipes*; M. Dellacasa, 1988a (1987): 231

TYPE LOCALITY: Danané et environs, Haute-Côte d'Ivoire.

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (holotype male examined)

DESCRIPTION. Length 4.5 mm, oval-elongate, convex, sericeous, glabrous. Brown-reddish, front and pronotum disc darker. Head with epistome nearly flat, finely regularly rather sparsely punctured; clypeus deeply sinuate at middle, angulate at nearly straight sides, angles feebly upturned, quite bordered, border not ciliate; genae obtusely rounded, glabrous, more protruding than eyes; frontal suture much finely impressed, not at all tuberculate. Pronotum with greater width at base, doubly punctured; smaller punctures rather regularly scattered throughout; large punctures, three to five times larger than small punctures, irregularly sparse, more dense on sides but lacking on disc, near base contiguously arranged in transversal bent; sides straight, thinly bordered; hind angles obliquely truncate, inward feebly sinuate; base distinctly bisinuate, not bordered. Scutellum flat, distinctly microreticulate so rather dull, unpunctured. Elytra regularly oval, with small humeral tooth; rather finely striate; striae finer on disc a bit broader preapically, the lateral ones shortened and joined among them at apex; interstices microreticulate, feebly convex, finely sparsely punctured. Hind tibiae superior apical spur shorter than first tarsal segment; latter longer than following three combined. Male: fore tibiae strongly widened from basal third to apex at inner margin, their apical spur stout and abruptly curved outward; hind tibiae flattened, widened at each side, outer margin fimbriate with rather short equal spinules, lacking of transverse carinae. Female: unknown.

DISTRIBUTION. The species is so far known from type locality only.

Genus *APHODIUS* Illiger, 1798

Aphodius Illiger, 1798: 15; Latreille, 1810: 428; Ádám, 1994: 13

Platycephalus Cuvier, 1798: 517 (nec *Platycephalus* Block, 1795; Pisces); Mulsant, 1842: 30 (as synonym of *Aphodius*)

Aphodius (*Aphodius* fraction *Aphodius*); Mulsant & Rey, 1870b (1869): 408

Aphodius (*Aphodius*); Mulsant & Rey, 1871 (1870): 473; G. Dellacasa, 1983: 175

Aphodius (secção *Cytoderhinus*) Seabra, 1909: 12 (**n. syn.**)

Rhodaphodius Ádám, 1994: 5 (**n. syn.**)

TYPE SPECIES: *Scarabaeus fimetarius* Linné, 1758 (subsequent designation: Latreille, 1810).

DESCRIPTION. Medium or large size species (length 5-15 mm), oblong, strongly convex, shiny, glabrous. Black; elytra red or yellow, often with blackish spots or bands; rarely quite black; pronotum usually with fore angles testaceous. Head with epistome punctured; clypeus feebly sinuate at middle, rounded at sides, quite bordered, border glabrous; genae obtusely rounded, ciliate, moderately more protruding than eyes; latter rather small; frontal suture trituberculate. Pronotum convex, doubly punctured; hind angles obliquely truncate; base distinctly bordered. Scutellum small, triangular, more or less widely punctured. Elytra elongate, convex, glabrous; striae wide, not too much deep, crenulate; interstices usually flat on disc, sparsely punctured. Fore tibiae distally tridentate and proximally serrulate at outer margin, upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with short and equal spinules. Pygidium finely, densely and elongately pubescent. Sexual dimorphism shown in males by impression at middle of front margin of pronotum, by stronger tubercles of frontal suture; by more scattered punctation of pronotum disc and by middle tibiae inferior apical spur obliquely truncate and slightly hooked apically. Aedeagus with paramera apically acuminate. Epipharynx feebly sinuate at front margin; epitorma drop-shaped; corypha with short, rather stout apical spinules, moderately protruding beyond front margin; pedia densely pubescent; chaetopariae short and dense.

DISTRIBUTION. Holarctic, Mexican Transition Zone, Oriental and Australian region.

REMARKS. Ádám (1994) described the genus *Rhodaphodius* ascribing to it only *Aphodius foetens* (Fabricius, 1787) at that time pertaining to *Aphodius* subgenus *Aphodius* s. str. The diagnosis is quite insufficient to define a genus-group taxon because it does not report any of the morpho-anatomical characters currently utilized in modern Aphodiinae taxonomy nor any discriminating character. Therefore we are herein compelled to consider *Rhodaphodius* synonym of *Aphodius*.

Aphodius fimetarius (Linné, 1758) (figs 380, 392-394)

Scarabaeus fimetarius Linné, 1758: 348

Aphodius fimetarius; Illiger, 1802: 31; Ádám, 1994: 13

Aphodius (*Aphodius*) *fimetarius*; Mulsant & Rey, 1871 (1870) : 474; Landin, 1956b: 8 (type location)

TYPE LOCALITY: "Europa".

TYPE DEPOSITORY: Linnean Society. London (type not examined).

DESCRIPTION. Length 6-9 mm, oblong, strongly convex, shiny, glabrous. Black, front angles of pronotum and elytra red; latter rarely with a blackish discal spot, more rarely quite piceous or blackish; antennal club testaceous. Head with epistome rather convex with curve transverse carina, finely sparsely, distally a bit more densely and irregularly, punctured; clypeus feebly sinuate at middle, widely rounded at sides, quite bordered, border distinctly upturned; genae rounded, feebly auriculate, feebly more protruding than eyes; frontal suture distinctly trituberculate. Pronotum regularly convex, doubly punctured, fine punctures sparsely scattered as larger ones, latter more dense on sides; lateral margin not sinuate before hind angles; latter obliquely truncate; base distinctly

bordered. Scutellum triangularly widened, finely punctured on basal half, quite finely microreticulate. Elytra elongate, convex, shiny; striae wide, rather superficial, distinctly crenulate; interstices flat, sparsely finely punctured, preapically subrugose and nearly dull. First segment of hind tarsi a bit longer than superior apical spur of tibia and as long as following three combined. Male: tubercles of frontal suture strong, central one horn-shaped; epistome distinctly carinate; pronotum with distinct impression at middle of front margin. Female: tubercles of frontal suture weaker; epistomal carina faint; pronotum without impression at front margin.

DISTRIBUTION. Holarctic, Mexican Transition Zone, Oriental and Australian region.

Genus *APHODOBIUS* Péringuey, 1901

Aphodobius Péringuey, 1901: 420; Paulian, 1942: 50

Aphodius (*Aphodobius*); A. Schmidt, 1913: 120; M. Dellacasa, 1988a (1987): 88

Aphodius (*Esymoides*) Balthasar, 1945b: 40 (**n. syn.**)

Aphodius (Artengruppe *Aphodobius*); Endrödi, 1964a: 139

Aphodius (group *Aphodobius*); Endrödi & Rakovič, 1981: 36, 45

TYPE SPECIES: *Aphodius inornatus* A. Schmidt, 1908 (= *Aphodius misellus* Boheman, 1857 *sensu* Péringuey, 1901) (**present designation**).

DESCRIPTION. Rather small species (length 4-5.5 mm), oval-elongate. moderately convex, shiny or sericeous, glabrous. Red-brownish; head and pronotum darker; sometimes elytra darkened on disc too. Head narrowed frontward; epistome more or less strongly gibbous, usually finely punctured; clypeus anteriorly truncate or feebly convex, rounded at sides, quite finely bordered, border shortly ciliate; genae small, rather elongately ciliate, more protruding than eyes; latter rather large; frontal suture not tuberculate. Pronotum transverse; doubly punctured; lateral margins as well as base bordered. Scutellum small, pentagonal with sides shortly parallel toward base. Elytra oval, not denticulate at shoulder; distinctly punctato-striate, first stria wider than second on preapical declivity; interstices flat or feebly convex. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. Middle and hind tibiae with rather strong transverse carinae on outer face; apically fimbriate with spinules elongate and alternately unequal. Pygidium finely and sparsely pubescent on disc; its apical margin rather elongately ciliate. Sexual dimorphism shown in males by more broadened and more finely punctured head and pronotum; epistome less strongly gibbous; fore tibiae apical spur rather short and stout; superior apical spur of hind tibiae shorter than first tarsal segment. Aedeagus with slender and more or less elongate paramera, with or without apical setae. Epipharynx with anterior margin nearly straight; epitorma reaching front margin; corypha with six spiculae variously elongate; chaetopariae fine and densely arranged; pedia densely ciliate with stouter antero-lateral chaetae mixed; tormae rather shortened.

DISTRIBUTION. Southern Afrotropical and Oriental region.

REMARKS. The genus *Aphodobius* was wrongly defined when described and thereafter wrongly applied. In its original diagnosis, Péringuey stated: "I propose this genus for

Aphodius misellus Boh....." and furtherly to separate *misellus* from *villosulus*, another species pertaining to the new genus, he wrote: "Upper side glabrous, ...*misellus*" and "Upper side pubescent, ...*villosulus*".

Boheman (1857) in original diagnosis of *Aphodius misellus* wrote: "*elytris ... breviter pallido-pubescentibus...*" and furtherly he repeats: "*Elytra... superne modice convexa, breviter, parce pallido-pubescentia, ...*". Evidently Péringuey designated as type species of *Aphodobius* a glabrous taxon which cannot be *misellus* Boheman.

Thanks due to Mrs. M. Cochrane from South African Museum, Cape Town, where the types of *Aphodius* described by Péringuey are preserved, and to Dr R. Oberprieler from Research Institute (National Collection of Insects & Plant Protection), Pretoria, where is another part of Péringuey's collection, one of us (Bordat) had confirmation of this hypothesis.

The twenty seven specimens loaned for study by Mrs. Cochrane have handwritten identification label "*Aphodius misellus* Boh." but the handwriting cannot be attributed beyond doubt to Péringuey. Whereas the other three specimens loaned by Dr Oberprieler have handwritten identification label surely by Péringuey: "*Aphodius misellus* omn. typic" and another by Endrödi "*Aphodius (Aphodiellus [sic!]) misellus* Boh.

As a matter of fact all specimens submitted for study pertain to *Aphodius inornatus* A. Schmidt, a species described later (1908), and consequently the original generic diagnosis of *Aphodobius* was established by Péringuey on the basis of the characteristics of this taxon. Nowadays *Aphodius inornatus* A. Schmidt is considered belonging to the group of Afrotropical *Nobius* which are strongly different from Palearctic *Nobius*.

Thanks due to Dr P. Lindskog from Naturhistoriska Riksmuseet, Stockholm, one of us (Bordat) was able to study the type of *Aphodius misellus* Boheman and to check that it pertains to the genus *Trichaphodius* A. Schmidt, 1913 (**new combination**).

As for Priority rule, *Trichaphodius*, genus-group name rather always correctly applied and currently used by all authors, has to be considered junior synonym of *Aphodobius* Péringuey, but the latter was never revised after its original description and it is mentioned only "*pro memoria*" in all monographic works dealing with Afrotropical Aphodiidae.

Nevertheless, because the type species of *Aphodobius* (i.e.: *Aphodius misellus* Boheman) was misidentified by Péringuey, the case has to be referred to the International Commission on Zoological Nomenclature which may designate, by use of plenary powers, as type species the taxon actually involved (i.e.: *Aphodius inornatus* A. Schmidt, 1908) but wrongly identified at time of type fixation.

We are not able to foresee the decision of the Commission, to which the case is going to be proposed, but following the logic of the arguments exposed, judging best to serve stability and universality of Nomenclature, we maintain, in the meantime, *Aphodius inornatus* A. Schmidt, 1908, as type species of genus *Aphodobius* retaining it valid and selfstanding genus-group taxon. Anyway all species pertaining to said genus (except the type species) are still in bad need of a thorough taxonomic study with modern criteria.

Balthasar (1945: 40) described the subgenus *Esymoides* and its type species (by monotypy) *Aphodius amplipennis* from "China, prov. Szetschwan". We had examined

the holotype female preserved in Balthasar's collection at Prague Museum and due to habitus and epipharyngeal features we doubtless propose the new synonymy of *Esymoides* versus *Aphodobius*.

Important enough, it is to remark that said species results, at time, the unique taxon from Oriental region pertaining to *Aphodobius* as intended into the present systematic limits.

Aphodobius inornatus (A. Schmidt, 1908) **n. comb.** (figs 381, 395-397)

Aphodius inornatus A. Schmidt, 1908: 52

Aphodius (*Blackburneus*) *inornatus*; A. Schmidt, 1913: 138

Blackburneus inornatus; Paulian, 1942: 77

Aphodius (*Aphodius* Artengruppe *Blackburneus*) *inornatus*; Endrödi, 1960b: 192

Aphodius (Artengruppe *Blackburneus*) *inornatus*; Endrödi, 1964a: 253

TYPE LOCALITY: Transvaal [South Africa].

TYPE DEPOSITORY: Naturhistoriska Riksmuseet. Stockholm (type male examined)

DESCRIPTION. Length 4-5.5 mm, oval-elongate, moderately convex, glabrous; head and pronotum shiny, elytra microreticulate so sericeous. Head and pronotum brownish; clypeal margin and pronotum sides yellowish; scutellum and elytra brown-yellowish; latter with suture, a discal cloudy spot and, sometimes, striae too, dark brownish. Head with epistome gibbous, doubly punctured; clypeus anteriorly truncate, rounded at sides; latter nearly straight, quite thinly bordered, border shortly ciliate; genae aligned to clypeal margin, obtusely rounded, ciliate, more protruding than eyes; frontal suture feebly raised, not tuberculate. Pronotum doubly punctured; lateral margins nearly straight, feebly divergent backward; hind angles obliquely truncate, not inward sinuate; base feebly bisinuate, finely bordered. Scutellum with few small punctures on basal third. Elytra with striae fine and distinctly crenulate on disc, progressively widened toward apex and there faintly punctured; interstices convex, finely sparsely punctured. Male: head and pronotum relatively wider; epistome less gibbous, more finely sparsely punctured at middle, laterally mixed larger and denser punctures; finer punctures of pronotum throughout scattered; large punctures, four to six times larger than small punctures, very sparse on disc and more dense toward base; fore tibiae more slender, their apical spur rather short, stout and inward curved apically; hind tibiae superior apical spur distinctly shorter than first tarsal segment, latter as long as following three combined. Female: head and pronotum relatively narrower; epistome more convex and as well as pronotum more coarsely densely and regularly punctured; fore tibiae relatively shorter, their apical spur regularly acuminate toward apex; hind tibiae superior apical spur nearly as long as first tarsal segment, latter shorter than following three combined.

DISTRIBUTION. South Africa (Transvaal).

Genus APHODOHARMOGASTER Endrödi, 1983

Aphodoharmogaster Endrödi, 1983: 39

TYPE SPECIES: *Aphodoharmogaster costata* Endrödi, 1983 (original designation).

DESCRIPTION. Medium size species (length: 5-6.5 mm), convex, rather shiny, nearly glabrous. Brown-blackish, clypeal margin and anterior angles of pronotum shadowy reddish. Head coarsely quite subregularly punctured; clypeus feebly sinuate at middle, rounded at sides, thinly completely bordered, border shortly bristled; genae obtusely rounded, sparsely shortly bristled, more protruding than eyes, latter medium sized; frontal suture distinct, finely impressed, not tuberculate. Pronotum transverse, quite strongly regularly punctured; lateral margins and posterior angles strongly bordered; hind angles feebly truncate. Scutellum small, narrowly pentagonal, parallel-sided at base. Elytra without humeral denticle; with ten broad striae more or less distinctly bordered; interstices not joined apically, convex basally, narrower and strongly cariniform toward apex; fourth, sixth, eighth and tenth ones shortened apically. Fore tibiae distally tridentate but proximally not serrulate at outer margin, upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules elongate and progressively unequal. Abdominal sternites densely punctured; punctures thinly shortly pubescent. Pygidium with few setae, more elongate apically. Sexual dimorphism shown in males by relatively more dense punctation of head and pronotum, and by shortened and curved apically middle tibiae inferior apical spur. Aedeagus with paramera elongate and widened laterally at apex. Epipharynx with anterior margin crenulate; epitorma drop-shaped; corypha prominent beyond front margin and with six elongate spinules at apex; pariae sparsely and rather elongately pubescent, pubescence more longer laterally; chaetopariae rather fine.

DISTRIBUTION. Afrotropical region.

REMARKS. Several species currently ascribed either to *Pleuraphodius* or to *Oxyomus* pertain surely to *Aphodoharmogaster*.

Aphodoharmogaster costata Endrödi, 1983 (figs 382, 398-400)

Aphodoharmogaster costata Endrödi, 1983: 40

TYPE LOCALITY: Dwesa Forest, Transkei.

TYPE DEPOSITORY: Transvaal Museum, Pretoria (holotype female examined).

DESCRIPTION. Length 5-6.5 mm, oval-elongate, convex, rather shiny, nearly glabrous, only elytral interstices finely shortly pubescent toward apex. Brown-blackish; clypeal margin, pronotum sides and sometimes also elytra shadowy reddish. Head quite, nearly regularly doubly punctured; epistome distinctly gibbous with more large and a bit more sparse punctation; clypeus feebly sinuate at middle, rounded at sides, thinly bordered, border shortly completely bristled; genae obtusely rounded, shortly sparsely bristled, more protruding than eyes; frontal suture finely impressed, not at all tuberculate. Pronotum feebly narrowed frontward, completely, coarsely, doubly punctured; punctation relatively a bit more smaller and finer than on head; lateral margins straight at proximal half, distinctly bordered, with wide submarginal groove; base not bordered but with a series of contiguous large punctures. Scutellum carinate at middle toward apex, punctured at base. Elytra feebly widened posteriorly; striae rather wide and distinctly crenulate near elytral base, progressively wider and unpunctured toward apex; interstices basally convex, strongly cariniform toward apex, finely serially punctured laterally,

punctures more or less diffusedly shortly pubescent preapically. Fore tibiae apical spur rather short and acuminate at apex. Hind tibiae superior apical spur as long as first tarsal segment; latter as long as following three combined. Male: head and pronotum relatively less densely punctured; inferior apical spur of middle tibiae shortened and curved apically. Female: head and pronotum relatively more densely punctured; inferior apical spur of middle tibiae regularly elongate and straight.

DISTRIBUTION. South Africa (Cape Province, Transvaal, Natal) and Transkei.

REMARKS. This taxon is often found in the collections identified as *Oxyomus costipennis* Boheman, 1857. We cannot establish without doubt the synonymy of *Aphodoharmogaster costata* Endrödi, 1983 versus *Oxyomus costipennis* Boheman, 1857 because we had not yet the opportunity to study the type of the latter.

Genus APSTEINIELLA A. Schmidt, 1916

Jacobsonia W. Koshantschikov, 1912: 511 (nec *Jacobsonia* Berlese, 1910; Arachnida)

Yakobsonia; Sharp, 1912: 221 (incorrect spelling pro *Jacobsonia*)

Apsteiniella A. Schmidt, 1916: 99 (*nomen novum*)

TYPE SPECIES: *Jacobsonia georgii* W. Koshantschikov, 1912 (monotypy).

DESCRIPTION. Medium to rather large species (length 5-9 mm), elongate-oval, convex, glabrous, shiny; light to dark testaceous. Head with epistome convex, shiny, granulate; clypeus with several more or less distinct teeth, the two distal ones more sharp and prominent; genae obtusely angulate, elongately ciliate, feebly more protruding than eyes; latter rather large; frontal suture weakly tuberculate. Pronotum transverse, convex, shiny, quite finely punctured; base and sometimes front margin thinly bordered. Scutellum small, triangular. Elytra elongate, moderately widened posteriorly; striae fine, feebly crenulate; interstices nearly flat. Fore tibiae distally tridentate and proximally serrulate at outer margin, upper side with few extremely fine punctures irregularly scattered. Hind femora strongly widened. Middle tibiae at upper margin with some elongate setae. Hind tibiae moderately widened apically with two strong complete carinae on outer face, lower apical margin with very short apical spines of the same length; superior and inferior apical spurs nearly of the same length and longer than first segment of tarsi. Claws corneous, thin, elongate, slightly curved. Pygidium quite elongately pubescent, pubescence denser toward apical margin. Sexual dimorphism shown in males by stronger tubercles of frontal suture, fore tibiae apical spur stout and distinctly hooked apically, pronotum subparallel-sided. Aedeagus elongate, with paramera curved and moderately widened apically. Epipharynx rounded at sides, anteriorly not sinuate at middle; corypha with four stout spines feebly protruding beyond front margin; epitorma drop-shaped; chaetopariae with short spines densely arranged; chaetopodia sparsely pubescent, with numerous stout short scattered spines.

DISTRIBUTION. Arabian and Central Asian deserts.

Apsteiniella georgii (W. Koshantschikov, 1912) (figs 401, 405-407)

Jacobsonia georgii W. Koshantschikov, 1912: 511

Apsteiniella georgii; A. Schmidt, 1916: 99

TYPE LOCALITY: Imam-baba [Turkmenistan].

TYPE DEPOSITORY: Zoologicheskij Institut R. A. N. St. Petersburg (lectotype male examined).

DESCRIPTION. Length 5-7 mm, elongate-oval, convex, shiny, glabrous. Light or dark testaceous. Head shiny; epistome gibbous, quite strongly granulate; clypeus distinctly sinuate at middle, shortly bristled all round, with twelve upturned teeth, the distal ones more sharp and prominent; genae auriculate, obtusely angulate, distinctly bristled, feebly more protruding than eyes; frontal suture raised and more or less distinctly tuberculate; front irregularly punctured. Pronotum transverse, strongly convex, shiny, quite thinly bordered, regularly finely punctured; sides with elongate scattered yellowish hairs; hind angles largely rounded. Scutellum triangularly elongate, flat, sparsely punctured. Elytra elongate, convex, shiny; striae fine, subcrenulate; interstices nearly flat, sparsely finely punctured. Middle tibiae with some long setae very elongate at upper margin. Hind tibiae superior apical spur obtusely truncate and hooked apically, distinctly longer than first tarsal segment; latter longer than second one. Male: shape relatively more parallel; central tubercle of frontal suture distinct; apical spur of front tibiae stout, distinctly hooked apically; pronotum subparallel-sided. Female: shape moderately widened posteriorly, central tubercle of frontal suture weak and transverse, apical spur of front tibiae elongate and regularly acuminate apically; pronotum widely rounded at sides.

DISTRIBUTION. Turkmenistan deserts.

Genus ARROWIELLUS Balthasar, 1933

Aphodius (*Arrowiellus*) Balthasar, 1933a: 113; M. Dellacasa, 1988a (1987): 232

Arrowiellus; Paulian, 1942: 84

Aphodius (*Aphodius* Artengruppe *Arrowiellus*); Endrödi, 1960b: 199

Aphodius (Artengruppe *Arrowiellus*); Endrödi, 1964a: 273

TYPE SPECIES: *Aphodius mulciber* Balthasar, 1933 (monotypy).

EX ORIGINAL DESCRIPTION. "[medium size species (length 6 mm), almost flat], rather shiny, glabrous. [Brown-yellowish; head, pronotum and elytral suture darker]. Head [with epistome] flat [at centre, finely and sparsely punctured toward clypeal margin only]; clypeus anteriorly [widely] truncate, not sinuate at middle, slightly broadened backward; genae small, [auriculate], obtusely angulate, [distinctly more protruding than eyes]; frontal suture obsolete, [not at all tuberculate]. Pronotum [sparsely and microscopically punctured on disc thus appearing nearly smooth, only laterally with few somewhat larger punctures]; sides [distinctly rounded] with lateral margin thickly bordered; [hind angles rounded and shortly ciliate; base bordered]. Scutellum [small], narrowly triangular, not at all parallel-sided. Elytra [rather superficially striate]; striae finely punctured, not crenulate; interstices [convex, very finely punctured]. Hind tibiae apically fimbriate with spinules strongly unequal. [Sexual dimorphism unknown]".

DISTRIBUTION. North-eastern Afrotropical region.

BALTHASAR'S REMARKS. "The new subgenus is [systematically] close only to one other subgenus [at time] known. Anyway, it might be considered close to *Koshantschikovius*,

but the species pertaining to this subgenus have head broad and short [widely transverse?], clypeus sinuate [at middle], genae more [strongly] protruding and frontal suture raised or impressed".

Arrowiellus mulciber (Balthasar, 1933)

Aphodius (*Arrowiellus*) *mulciber* Balthasar, 1933a: 113

Arrowiellus mulciber; Paulian, 1942: 84

TYPE LOCALITY: "Africa orient., Moschi" [Moshi, Tanzania].

TYPE DEPOSITORY: Balthasar collection, Národní Muzeum Prague (holotype not examined, probably lost, cfr. remarks).

EX ORIGINAL DESCRIPTION. "Length 6 mm, [almost] flat, [glabrous]; shiny, elytra very finely microreticulate, thus rather dull. Brown-yellowish; head, pronotum and elytral suture darker; legs dark brownish; inferior side yellowish. Head [with epistome] flat, nearly impunctate at centre, only toward clypeal margin with few fine punctures; clypeus anteriorly widely truncate, not [at all] sinuate [at middle], obtusely broadened [laterally]; genae small, auriculate, distinctly more protruding than eyes; frontal suture obsolete, not at all tuberculate. Pronotum sparsely, nearly microscopically punctured on disc and with few somewhat larger punctures on sides only; lateral margins broadly rounded and distinctly bordered; hind angles rounded and shortly ciliate; base bordered. Scutellum with few fine punctures. Elytra superficially striate; striae finely punctured, not crenulate; interstices convex, more convex on disc than toward apex where punctation is near obsolete. Hind tibiae superior apical spur nearly as long as first tarsal segment; latter as long as following three combined."

DISTRIBUTION. The species is recorded from type locality only.

REMARKS. The holotype was not found in Balthasar's collection. As a matter of fact it results sent in loan for study to Dr Sebo Endrödi (Budapest) on December 1955 but, from Endrödi's works, it does not appear he had the opportunity to examine the specimen or not. At present, the taxon is quite unknown.

Genus *BASILEWSKYANUS* Endrödi, 1956 **stat. nov.**

Aphodius (*Basilewskyanus*) Endrödi, 1956: 75; M. Dellacasa, 1988a (1987): 233

Aphodius (*Aphodius* Artengruppe *Basilewskyanus*); Endrödi, 1960b: 95

Aphodius (Artengruppe *Basilewskyanus*); Endrödi, 1964a: 214

TYPE SPECIES: *Aphodius elisabethae* Endrödi, 1956 (monotypy).

DESCRIPTION. Medium size species (length 6-8 mm), elongate, convex, shiny, glabrous. Head and pronotum piceous, respectively with clypeal and lateral margins more or less widely yellowish; elytra pale or dark testaceous, with or without small blackish spots. Head with epistome doubly punctured; clypeus sinuate at middle, widely rounded at sides, quite bordered, border ciliate; genae obtusely rounded, ciliate, more protruding than eyes; latter medium size; frontal suture trituberculate. Pronotum transverse, doubly punctured, front and basal margin not bordered. Scutellum small, pentagonal with sides parallel toward base and wider than first two elytral interstices. Elytra without humeral

denticle; striae fine, punctured, the first wider than other ones apically; interstices flat or feebly convex, punctured; epipleura pubescent at basal third. Fore tibiae distally tridentate and with one or two proximal denticle at outer margin; upper side smooth. Middle and hind tibiae with two strong carinae on outer face, apically fimbriate with spinules elongate and alternately unequal. Pygidium with some elongate setae on disc and on distal margin. Sexual dimorphism shown in males by more raised median tubercle of frontal suture, by front with a distinct median impression; by pronotum subparallel-sided toward base, relatively less densely punctured on disc and with more strong lateral callosities. Aedeagus with paramera either rounded or acuminate apically. Epipharynx broadly transverse, densely bristled at anterior and lateral margins; pariae distinctly sinuate and lobate distally; sometimes corypha with few apical spiculae; epitorma nearly faint; chaetopariae fine and densely arranged.

DISTRIBUTION. Afrotropical region.

Basilewskyanus elisabethae (Endrödi, 1956) **n. comb.** (figs 402, 408-410)

Aphodius (*Basilewskyanus*) *elisabethae* Endrödi, 1956: 75; M. Dellacasa, 1988a (1987): 233

TYPE LOCALITY: Elisabethville, Katanga [Zaire].

TYPE DEPOSITORY: Musée Royal de l'Afrique Centrale. Tervuren (holotype male examined).

DESCRIPTION. Length 6-8 mm, elongate, convex, shiny glabrous. Testaceous, epistome, pronotum disc, sides of scutellum, suture and elytral striae darker; legs brown-reddish. Head with epistome finely and sparsely punctured, larger punctures laterally mixed; clypeus feebly sinuate at middle, widely rounded at sides, thinly bordered, border quite shortly bristled; genae obtusely rounded, shortly bristled, more protruding than eyes; frontal suture with median strong tubercle, arcuately carinulate at tip; the lateral ones weaker and transverse. Pronotum doubly punctured, small punctures like those of head, mixed irregularly scattered five to six time larger ones; lateral margins bordered; hind rounded angles and base not bordered. Scutellum distinctly punctured on basal half. Elytra with striae finely punctured, subcrenulate; interstices feebly convex, microreticulate, very finely and sparsely punctured; epipleura with backward curved bristles on basal third. Anterior tibiae tridentate and with only one proximal denticle at outer margin; inferior longitudinal carina distinctly, finely denticulate. Hind tibiae superior apical spur somewhat shorter than first tarsal segment; latter as long as following three combined. Abdominal sternites with long straight elongate setae at sides. Male: tubercles of frontal suture relatively stronger; pronotum widely transverse and less densely punctured on disc. Female: tubercles of frontal suture relatively weaker; pronotum narrowed frontward and more densely punctured on disc.

DISTRIBUTION. The taxon is known from type locality only.

Genus *BIRALUS* Mulsant & Rey, 1870

Aphodius (*Eudolus* fraction *Biralus*) Mulsant & Rey, 1870b (1869): 467

Aphodius (*Biralus*); Reitter, 1892: 243

Biralus; Ádám, 1994: 14

TYPE SPECIES: *Scarabaeus satellitius* Herbst, 1789 (monotypy).

DESCRIPTION. Medium size species (length 5-9 mm), oval elongate, rather flat, strongly shiny; glabrous, sometimes elytra sparsely pubescent apically. Blackish, elytra dark reddish usually with blackish subapical cordiform spot. Head with epistome feebly gibbous and finely punctured; clypeus not or indistinctly sinuate at middle, rounded at sides, quite bordered, border glabrous; genae rounded, ciliate, not more protruding than eyes; latter rather small; frontal suture not tuberculate, sometimes obsolete. Pronotum transverse, somewhat widened basally, very finely punctured, few sparse and larger punctures mixed on sides; latter strongly bordered; hind angles nearly right; basal margin distinctly bilobate, the border more or less widely interrupted at middle. Scutellum small, widely cordiform or amygdaliform, very finely punctured. Elytra with striae superficial; interstices flat or feebly convex. Fore tibiae distally tridentate and proximally serrulate at outer margin, upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules elongate and irregularly unequal. Pygidium with few and very elongate straight discal setae; its apical margin finely, densely and very elongately ciliate. Sexual dimorphism shown in males by inferior apical spur of middle tibiae short, apically truncate and by deeply grooved metasternal plate. Aedeagus with paramera widely rounded apically and shortly membranous apically. Epipharynx barely sinuate at front margin, rounded at sides; epitorma nearly drop-shaped; corypha with protruding unequal spiculae; pedia densely pubescent and with several short chaetae distally; chaetopariae short and densely arranged.

DISTRIBUTION. Palearctic region.

Biralus satellitius (Herbst, 1789) (figs 403, 411-413)

Scarabaeus satellitius Herbst, 1789: 281

Scarabaeus pecari Fabricius, 1792: 38

Aphodius pecari; Erichson, 1848: 898

Aphodius (Eudolus) satellitius; Mulsant & Rey, 1871 (1870): 474

Aphodius (Biralus) satellitius; Reitter, 1892: 244

Biralus satellitius; Ádám, 1994: 14

TYPE LOCALITY: Hannover [Germany].

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 5-9 mm, oval elongate, flat, strongly shiny, glabrous. Head, pronotum and scutellum blackish; elytra dark reddish with suture, a cordiform preapical spot and lateral margins blackish; sometimes elytra quite reddish. Head with epistome feebly gibbous, finely sparsely punctured; clypeus subsinuate at middle, rounded at sides, quite thinly bordered; genae rounded, elongately ciliate, not more protruding than eyes; frontal suture obsolete. Pronotum transverse, strongly shiny, feebly convex; finely, superficially, regularly and sparsely punctured on disc, with few, sparse, larger punctures on sides; latter strongly bordered; hind angles nearly right; base bisinuate, basal border widely interrupted at middle. Scutellum with few, very fine, basal punctures. Elytra feebly convex, nearly flat on disc, glabrous, shiny; striae wide, superficial, feebly punctured, subcrenulate; interstices flat, finely but rather densely

punctured, superficially microreticulate. First segment of hind tarsi longer than superior apical spur of tibiae and as long as following three combined. Male: epistome relatively more distinctly gibbous; middle tibiae inferior apical spur truncate apically; metasternal plate strongly grooved and densely punctured. Female: epistome nearly flat; middle tibiae inferior apical spur regularly acuminate apically; metasternal plate feebly grooved and sparsely punctured.

DISTRIBUTION. Southern Palearctic region.

Genus *BLACKBURNEUS* A. Schmidt, 1913

Aphodius (Blackburneus) A. Schmidt, 1913: 137; Balthasar, 1964: 178; M. Dellacasa, 1988a (1987): 99

Blackburneus; Paulian, 1942: 75

Aphodius (Aphodius Artengruppe *Blackburneus*); Endrödi, 1960b: 186

Aphodius (Artengruppe *Blackburneus*); Endrödi, 1964a: 242

Aphodius (group *Blackburneus*); Endrödi & Rakovič, 1981: 50

TYPE SPECIES: *Aphodius furcatus* A. Schmidt, 1909 (subsequent designation: Paulian, 1942)

DESCRIPTION. Small species (length 2.5-3.5 mm), shortly oval, convex, shiny, glabrous. Usually pale testaceous. Head with epistome punctured; clypeus sinuate at middle, rounded at sides, thinly bordered, border quite glabrous; genae faintly bristled, not more protruding than eyes; latter rather large; frontal suture distinctly grooved, not tuberculate. Pronotum doubly punctured; lateral margins and hind angles thinly bordered; base not bordered. Scutellum small, narrowly pentagonal with subparallel sides at basal quarter. Elytra without humeral denticle; striae punctured, the first one broadened apically; interstices flat. Fore tibiae distally tridentate and proximally feebly serrulate at outer margin, upper side sparsely and irregularly punctured. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules elongate and irregularly unequal. All tarsi somewhat longer than relative tibiae. Abdominal sternites punctured and pubescent. Pygidium with some elongate apical setae sparse and straight. Sexual dimorphism nearly faint: in males, the punctation of pronotum disc is relatively somewhat sparser and the inferior apical spur of mesotibiae somewhat shorter and stouter. Aedeagus with short and apically abruptly curved paramera. Epipharynx transverse with anterior margin feebly sinuate at middle; epitorma triangular; corypha with two strong apical spiculae; tormae short; pedia with rather stout and sparse setae, stronger ones mixed, mainly laterally frontward; chaetopariae rather stout.

DISTRIBUTION. Afrotropical (?), Oriental (?) and Neotropical region.

REMARKS. Due to the peculiar features of the type species designated by Paulian, the number of taxa pertaining to *Blackburneus* could be remarkably reduced and it is probable that only Neotropical species are going to be assigned to it.

Blackburneus furcatus (A. Schmidt, 1909) (figs 404, 414-416)

Aphodius furcatus A. Schmidt, 1909a: 10

Aphodius (Blackburneus) furcatus; A. Schmidt, 1913: 137

Blackburneus furcatus; Paulian, 1942: 75

TYPE LOCALITY: Cunyaba, Mato Grosso [Brazil].

TYPE DEPOSITORY: Naturhistoriska Riksmuseet. Stockholm (lectotype male examined)

DESCRIPTION. Length 2.5-3 mm, shortly oval, strongly convex, glabrous; shiny, elytra feebly alutaceous. Reddish-testaceous, elytral suture darker. Head trapeziform; epistome finely, near regularly, sparsely punctured, with median longitudinal carina anteriorly furcate, each branch obliquely extended almost till clypeal margin; clypeus sinuate at middle, rounded at sides, rather finely bordered, border glabrous; genae small, rounded, faintly bristled, not more protruding than eyes; frontal suture strongly impressed, feebly carinate. Pronotum doubly punctured, throughout scattered small punctures somewhat coarser than those of head, larger punctures sparse on disc and more dense at sides; latter parallel at basal half, regularly curved toward front angles; hind angles obliquely truncate; base not bordered. Scutellum narrow, somewhat subparallel-sided at basal fourth, with some small punctures near base. Elytra finely striate; striae feebly crenulate; interstices flat on disc, feebly convex on preapical declivity, superficially microreticulate, finely and sparsely punctured. Fore tibiae with one or two proximal denticles, their apical spur slender and rather elongate, as long as first two tarsal segments combined. Hind tibiae superior apical spur somewhat shorter than first tarsal segment; latter shorter than following two combined. Male: pronotum relatively less densely punctured on disc; inferior apical spur of middle tibiae relative shorter than superior one. Female: pronotum relatively more densely punctured on disc; inferior apical spur of middle tibiae as long as superior one.

DISTRIBUTION. The species is known from type locality only.

MATERIAL EXAMINED. The **lectotype male** (pinned specimen) **herein designated**, bears the following labels:

- 1) white, with mouth parts and aedeagus glued;
- 2) white, handwritten: Cunyaba Mato Grosso;
- 3) red, handwritten: *Aphodius furcatus* Schmidt, 1909, lectotype male, P. Bordat & G. Dellacasa des. 1996.

Three specimens (**paralectotypes herein designated**) from the same locality.

Genus *BODILUS* Mulsant & Rey, 1870

Aphodius (*Bodilus* fraction *Bodilus*) Mulsant & Rey, 1870b (1869): 518

Aphodius (*Therilus*); Mulsant & Rey, 1870a: 207 (junior synonym ?)

Aphodius (*Bodilus*); Mulsant & Rey, 1871 (1870): 474; Reitter, 1892: 191; Balthasar, 1964: 401; G. Dellacasa, 1983: 190

Aphodius (*Melaphodius*); Reitter, 1892: 238 (**n. syn.**)

Bodilus; Paulian, 1942: 90; Ádám, 1994: 14

Aphodius (*Aphodius* Artengruppe *Bodilus*); Endrödi, 1960b: 196

Aphodius (Artengruppe *Bodilus*); Endrödi, 1964a: 264

Aphodius (group *Bodilus*); Endrödi & Rakovič, 1981: 52

Aphodius (*Parabodilus*) Hollande & Théron, 1999 (1998): 159 (**n. syn.**)

Aphodius (*Neobodilus*) Hollande & Théron, 1999 (1998): 149 (as synonym of *Bodilus* by G. Dellacasa in footnote)

TYPE SPECIES: *Aphodius lugens* Creutzer, 1799 (subsequent designation: Reitter, 1892).

DESCRIPTION. Medium or large size species (length 5-12 mm), more or less convex, usually shiny, glabrous or pubescent. Testaceous, often head and pronotum darker; sometimes elytra with large, cloudy discal spot brownish. Head with epistome convex and punctured; clypeus feebly sinuate at middle, rounded at sides, quite bordered, border bristled; genae obtusely rounded, ciliate, more protruding than eyes; latter medium size; frontal suture distinct, trigibbous or tuberculate. Pronotum superficially, sparsely, often irregularly punctured; sides and base bordered. Scutellum small, triangular, microreticulate, usually punctured on basal half. Elytra convex, usually shiny, sometimes dull; striae fine, more or less distinctly crenulate; interstices flat or moderately convex, punctured, either glabrous or more or less widely pubescent. Fore tibiae distally tridentate and proximally serrulate at outer margin, upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules elongate and progressively unequal or short and equal. Pygidium with some elongate and straight discal setae; its apical margin finely and rather elongately ciliate. Sexual dimorphism shown in males by more distinct gibbosities or tubercles of frontal suture; by fore tibiae apical spur relatively stronger and inserted on inner margin at second outer tooth level; by less coarse punctation of pronotal disc and by more diffuse pubescence of elytral interstices. Aedeagus usually with very elongate, slender and digitiform tegmen; paramera very short and obtusely truncate or rounded apically. Epipharynx feebly sinuate at front margin, widely rounded at sides; epitorma drop-shaped; corypha with elongate and protruding spiculae; pedia densely pubescent, with several chaetae more or less regularly scattered; chaetopariae dense and moderately elongate.

DISTRIBUTION. Afrotropical, Oriental, Nearctic (?) and Palearctic region.

REMARKS. The subgenus *Therilus* was created by Mulsant & Rey (1870: 207) for their new species *Aphodius orophilus* described from "le Caucase". A. Schmidt (1913: 166) doubtfully assigned this taxon to subgenus *Bodilus*. Being *Aphodius orophilus* Mulsant & Rey, 1870 homonym of *Aphodius orophilus* Charpentier, 1827 (= *Aphodius fimetarius* ab. *autumnalis*), furtherly, A. Schmidt (1916: 98) proposed the new name *noxius* for the former. Because lacking of type material we herein accepted the proposal of A. Schmidt for the species-group taxon and therefore we consider doubtfully *Therilus* junior synonym of *Bodilus* as already stated by one of us (M. Dellacasa, 1988: 330).

The subgenus *Melaphodius* was created by Reitter (1892: 238) with type species, by original designation, *Aphodius limbatus* Germar, 1824 (= *Aphodius circumcinctus* W. Schmidt, 1840). The features of aedeagus and epipharynx of this taxon allow to consider the subgenus *Melaphodius* junior synonym of *Bodilus*.

One of us (G. Dellacasa), editing the work of Hollande & Thérond, maintained *Parabodilus* (type species *Aphodius wollastoni* Harold, 1862, by original designation) as valid subgenus of *Aphodius*. Otherwise, at present, we think more appropriate to consider this genus-group taxon junior synonym of *Bodilus* because the complex of discriminant features is not significantly defined.

Bodilus lugens (Creutzer, 1799) (figs 417-419, 420)

Aphodius lugens Creutzer, 1799: 59

Aphodius (*Bodilus*) *lugens*; Mulsant & Rey, 1871 (1870): 474

Bodilus lugens; Ádám, 1994: 14

TYPE LOCALITY: Wien [Austria] (conventional).

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 7-9 mm, oval-oblong, moderately convex, shiny, glabrous. Head brown-reddish, distally paler; pronotum dark brown-reddish widely testaceous on sides only, sometimes quite dark brownish; elytra testaceous, suture and lateral margins brownish; sometimes elytra without brownish lateral margins; abdomen testaceous. Head with epistome gibbous, finely and sparsely punctured at centre, more coarsely punctured distally; clypeus feebly sinuate at middle, largely rounded at sides; genae rounded, elongately ciliate, feebly more protruding than eyes; frontal suture trigibbous. Pronotum shiny, moderately convex, laterally elongately bristled, finely rather sparsely irregularly punctured; hind angles obtusely rounded; sides and base thinly bordered. Scutellum triangularly elongate, finely microreticulate, with few, sparse punctures near base. Elytra moderately convex, feebly widened posteriorly; striae wide, distinctly punctured, subcrenulate; interstices flat, superficially microreticulate so rather shiny; finely and sparsely punctured. First segment of hind tarsi somewhat shorter than superior apical spur of tibia and as long as following three combined. Male: frontal suture with central gibbosity more distinct; fore tibiae apical spur short, widened at middle and inserted at second outer tooth level; pronotum transverse, not narrowed frontward, finely sparsely and nearly regularly punctured on disc. Female: frontal suture with nearly faint gibbosities; fore tibiae apical spur slender and elongate; pronotum narrowed frontward, densely and irregularly punctured on disc.

DISTRIBUTION. Palearctic region.

Genus *BOUCOMONTIELLUS* Balthasar, 1932 **stat. nov.**

Aphodius (*Boucomontiellus*) Balthasar, 1932a: 36

TYPE SPECIES: *Aphodius pelliculosus* Balthasar, 1932 (original designation).

DESCRIPTION. Medium size species (length 5-7.5 mm), oval-elongate, moderately convex, quite shortly pubescent; head and pronotum shiny, elytra dull. Blackish. Head with epistome nearly flat, alutaceous, punctured; clypeus feebly sinuate at middle, widely rounded at sides, thinly bordered, border quite shortly bristled; genae strongly angulate, ciliate, strongly more protruding than eyes; latter medium size; frontal suture obsolete. Pronotum transverse, moderately convex, densely and coarsely punctured; sides nearly straight, thickly bordered, border shortly bristled; hind angles obtusely rounded; base bisinuate, not bordered. Scutellum small triangular. Elytra shortly oval, moderately convex, strongly denticulate at shoulder; finely striate; striae nearly impunctate; interstices flat, superficially and irregularly punctured; fore tibiae distally tridentate and proximally serrulate at outer margin; upper side finely and sparsely punctulate. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with

spinules elongate and irregularly unequal. Pygidium with some elongate setae at apical margin. Sexual dimorphism shown in males by epistome relatively less densely punctured and by pronotum more broadly transverse. Aedeagus rather broad and few convex; paramera membranous and distinctly pubescent apically. Epipharynx sinuate at anterior margin, rounded at sides; epitorma narrowly conical with several strong chaetae longitudinally arranged frontward; pedia densely pubescent with many stout and rather dense spines mixed; chaetopariae slender, elongate and rather densely arranged.

DISTRIBUTION. Eastern Palearctic region (China; Szechuan prov.).

Boucomontiellus pelliculosus (Balthasar, 1932) **n. comb.** (figs 421, 424-426)

Aphodius (*Boucomontiellus*) *pelliculosus* Balthasar, 1932a: 36

TYPE LOCALITY: Tatsienlu, Kiulung; China.

TYPE DEPOSITORY: Balthasar collection, Národní Muzeum. Praha (lectotype male examined).

DESCRIPTION. Length 6.5-7.5 mm; moderately convex, elongate-oval, quite densely, very shortly and finely pubescent; head and pronotum shiny, elytra dull. Blackish, elytra piceous; legs piceous with tarsi brown-reddish; antennal club blackish. Head with epistome nearly flat, alutaceous, with very dense, moderately coarse, subregular punctation; each puncture shortly setigerous; clypeus feebly sinuate at middle, broadly rounded at sides; genae near rightly angulose, rather shortly ciliate, strongly more protruding than eyes; frontal suture obsolete; front faintly tumid at middle and laterally. Pronotum transverse, moderately convex, very densely, coarsely and subregularly punctured; shortly setigerous punctures umbilicate and somewhat larger and denser than those on epistome; lateral margins slightly rounded, rather thickly bordered, border quite shortly bristled; hind angles obtusely rounded; base distinctly bisinuate, not bordered. Scutellum densely and irregularly punctured, subcarinate at middle toward apex. Elytra widely and regularly oval, moderately convex, strongly denticulate at shoulder; striae fine, shiny and superficial on disc, wider and deeper toward apex, near imperceptibly punctured; interstices rather wide, flat, strongly microreticulate thus dull, superficially, irregularly but rather densely punctured; each puncture shortly but distinctly setigerous; yellowish setae backwardly recumbent. Hind tibiae superior apical spur longer than first tarsal segment; latter somewhat longer than following three combined. Male: head with epistome relatively less densely punctured; pronotum more broadly transverse. Female: head with epistome relatively more densely punctured; pronotum less broad.

DISTRIBUTION. The species is so far known from type locality only.

MATERIAL EXAMINED. **Lectotype male, herein designated**, bearing the following labels:

- 1) white, printed: Tatsienlu, China;
- 2) white, printed: Kiulung; Reitter;
- 3) red, handwritten: Typus;
- 4) white, handwritten: *A. pelliculosus m.*; printed: Det. Dr. Balthasar;
- 5) red, handwritten: *Aphodius pelliculosus* Balthasar, 1932; lectotype male, P. Bordat & G. Dellacasa des. 1998.

Besides the lectotype, we studied four specimens (**paralectotypes herein designated**): one male and three females from the same locality.

Genus *BRACHIAPHODIUS* W. Koshantschikov, 1913

Brachiaphodius W. Koshantschikov, 1913b: 200; Paulian, 1942: 16 (footnote)

Aphodius (*Balthasarianus*) Paulian, 1934: 111 (**n. syn.**); Král, 2000: 66 (as synonym of *Brachiaphodus*)

Aphodius (*Brachiaphodius*); Paulian, 1945: 211; M. Dellacasa, 1988a (1987): 294 (as doubtful synonym of *Balthasarianus*)

TYPE SPECIES: *Aphodius pilosus* Harold, 1874 (original designation).

DESCRIPTION. Middle size species (length 6-9 mm), oval-elongate, moderately convex, more or less shiny, quite pubescent. More or less dark chestnut-brown. Head with epistome feebly gibbous, simply, rather regularly punctured, punctures nearly imperceptibly pubescent; clypeus anteriorly subtruncate or, at least, faintly sinuate at middle, quite bordered, border glabrous; genae rounded, shortly ciliate, more protruding than eyes or not; eyes medium sized; frontal suture finely impressed, not at all tuberculate. Pronotum transverse, simply punctured, punctures finely pubescent; sides rounded, greater width near base; lateral margins thickly bordered, shortly densely bristled; hind angles obliquely truncate and inward sinuate; base bisinuate, not bordered. Scutellum small, triangular, with curved sides. Elytra regularly oval-elongate; not denticulate at shoulder; striae rather fine, distinctly punctured, subcrenulate; interstices coarsely punctured, finely setigerous punctures arranged in nearly regular longitudinal rows. Anterior femora with a more or less strong tooth at front margin. Fore tibiae distally tridentate and proximally denticulate at outer margin, upper side smooth. Middle and hind tibiae with rather strong transverse carinae on outer face, apically fimbriate with spinules elongate and irregularly unequal. Abdominal sternites punctured and pubescent. Pygidium with some elongate apical setae. Sexual dimorphism shown in males by fore tibiae slender, strongly elongate and inward curved toward apex, their apical spur short and wide; middle tibiae with superior apical spur only apparent, inferior one reduced to small tooth at centre of a depression placed at apex of tibiae inferior margin. Aedeagus with tegmen either slender and elongate either short and rather stout; paramera straight, apically acuminate and fimbriate with short hairs. Epipharynx transverse; front margin feebly sinuate at each side, fringed with rather strong and elongate setae; epitorma and corypha nearly faint; chaetopariae rather elongate and sparsely arranged; pariae with a short belt of spiculae like those of chaetopariae.

DISTRIBUTION. Palearctic, Oriental and Afrotropical region.

REMARKS. It seems that the paper of W. Koshantschikov (1913b) has been overlooked by subsequent Authors. A. Schmidt (1913) too, in his revisional work on the world-wide classification of *Aphodiinae* genera and subgenera, probably published in 1914 or later, though in the same serial, did not consider it. Also in his 1922 monograph, Koshantschikov's taxa are not at all recorded probably because, as mentioned in the "Inhalt" (p. V), "die Literatur wurde bis 1914 beruchsigtig".

Paulian (1942: 16, footnote) only mentioned the genus *Brachiaphodius* stating that it might be very close to *Balthasarianus*. Furtherly, Paulian himself, (1945: 211) in the "Appendice" to "Coléoptères Scarabéides de l'Indochine", citing a Balthasar's paper (1943) on *Trichaphodius*, mentioned again the subgenus (sic!) *Brachiaphodius* W. Koshantschikov.

As a matter of fact, subgenus *Balthasarianus* was created by Paulian (1934) for his new species *Aphodius pilifer*, a taxon systematically close to *pilosus* Harold, 1874 therein not considered because resulting, at that time, included into *Trichaphodius* A. Schmidt, 1913.

Only M. Dellacasa (1988) doubtfully proposed the synonymy of *Balthasarianus* Paulian, 1934 versus *Brachiaphodius* W. Koshantschikov, 1913. Later, one of us (Bordat) had the opportunity to examine the types specimens of both type species and obviously ascertained the synonymy of *Balthasarianus* versus *Brachiaphodius*.

Brachiaphodius pilosus (Harold, 1874) (figs 422, 427-429)

Aphodius pilosus Harold, 1874: 190

Aphodius (Trichaphodius) pilosus; A. Schmidt, 1913: 136; A. Schmidt, 1922: 138

Brachiaphodius pilosus; W. Koshantschikov, 1913c: 200

Aphodius (Balthasarianus) pilosus; Balthasar, 1943: 109

TYPE LOCALITY: "India Or."

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (holotype female examined).

DESCRIPTION. Length 6-7.5 mm, oval-elongate, moderately convex, shiny, quite finely pubescent. Dark brown, sometimes clypeal margin and elytra paler. Head with epistome feebly convex, simply, medially, rather densely punctured, each puncture with short recumbent seta; clypeus anteriorly truncate, widely rounded at sides; genae aligned to clypeal margin, obtusely rounded, more protruding than eyes; frontal suture feebly raised. Pronotum punctured like head but punctation somewhat denser toward front angles; lateral margins rather thickly bordered, border smooth and shortly bristled; basal margin fimbriate with very short recumbent setae. Scutellum basally somewhat larger than first two elytral interstices, finely punctured and pubescent on basal half. Elytra moderately elongate; striae fine, feebly crenulate; interstices feebly convex, moderately punctured; rather dense setigerous punctures nearly regularly arranged in three longitudinal rowsbelts, setae quite recumbent; epipleural margin densely ciliate; epipleural carina faint at shoulder. Hind tibiae superior apical spur as long as first tarsal segment; latter as long as following three combined. Male: head somewhat larger; hind angles of pronotum relatively more strongly sinuate; fore tibiae slender, strongly elongate and inward curved toward apex, their apical spur short and stout; inferior apical spur of middle tibiae reduced to a small tooth. Female: head relatively narrower; hind angles of pronotum less strongly sinuate; fore tibiae normally shaped and their apical spur regularly acuminate toward apex; inferior apical spur of middle tibiae rather shortened but distinct.

DISTRIBUTION. Eastern India and Nepal (probably the taxon is widely spread on Himalayan Range).

Genus *CALAMOSTERNUS* Motschulsky, 1859

Calamosternus Motschulsky, 1859a: 156; Paulian, 1942: 94; Ádám, 1994: 13

Aphodius (*Aphodius* section *Calamosternus*); Mulsant & Rey, 1870b (1869): 443

Aphodius (*Megalismus*); Mulsant & Rey in Mulsant, 1870a: 209 (junior synonym?)

Aphodius (*Calamosternus*); Mulsant & Rey, 1871 (1870): 474; Balthasar, 1964: 432; G. Dellacasa, 1983: 205

Aphodius (*Aphodius* Artengruppe *Calamosternus*); Endrödi, 1960b: 196

Aphodius (Artengruppe *Calamosternus*); Endrödi, 1964a: 262

Aphodius (group *Calamosternus*); Endrödi & Rakovič, 1981: 51

Aphodius (*Pseuderytus*) Hollande & Théron, 1999 (1998) (as synonym of *Calamosternus* by G. Dellacasa, footnote)

TYPE SPECIES: *Scarabaeus granarius* Linné, 1767 (monotypy).

DESCRIPTION. Rather small species (length 4-6 mm), elongate, subcylindrical, shiny, glabrous. Blackish; sometimes elytra more or less widely reddish or yellowish; rarely quite reddish. Head with epistome gibbous and coarsely punctured, often transversely carinate anteriorly; clypeus sinuate at middle, rounded or angulate at sides, quite distinctly bordered, border laterally bristled; genae obtusely rounded, ciliate, more protruding than eyes; latter rather small; frontal suture trituberculate. Pronotum strongly convex, transverse, usually irregularly and sparsely punctured; sides and base bordered. Scutellum small, pentagonal with sides narrowed toward base. Elytra subparallel-sided; striae distinct, crenulate; interstices usually flat, finely punctured. Fore tibiae distally tridentate and usually proximally serrulate at outer margin; upper side faintly punctured. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules short and equal. First segment of hind tarsi shorter, equal or somewhat longer than superior apical spur of tibiae and usually shorter than following two combined. Pygidium coarsely and sparsely punctured, each puncture straightly and elongately setigerous; its apical margin rather densely, irregularly and elongately ciliate. Sexual dimorphism shown in males mostly by relatively stronger tubercles of frontal suture and by relatively more sparse punctation of pronotum. Aedeagus with elongate paramera, apically either rounded or acuminate. Epipharynx more or less distinctly sinuate at front margin, widely rounded at sides; epitorma globous; corypha with short and strong apical spiculae; pedia with prophobae dense, several short chaetae mixed; chaetopariae short, strong, few densely arranged; apotormae slender and elongate.

DISTRIBUTION. Subcosmopolitan.

REMARKS. The subgenus *Megalismus* was created by Mulsant & Rey (1870a: 209) for their new species *Aphodius stercorarius* from "Mesopotamie" and *Aphodius ephippiger* from "Arabie".

Adolf Schmidt (1913: 173; 1922: 327) recorded *Aphodius stercorarius* among the taxa with "*subgenere incerto*" and considered *Aphodius ephippiger* as doubtful synonym of *Aphodius* (*Mesontoplatys*) *arabicus* Harold, 1875.

M. Dellacasa (1988: 330) designated *Aphodius stercorarius* type species of *Megalismus* and doubtfully proposed the synonymy of latter versus *Calamosternus*. In fault of type material availability we herein maintain this doubtful proposal.

Calamosternus granarius (Linné, 1767) (figs 423, 430-432)

Scarabaeus granarius Linné, 1767: 547

Aphodius granarius; Mulsant, 1842: 198

Calamosternus granarius; Motschulsky, 1859a: 156; Paulian, 1942: 94; Ádám, 1994: 13

Aphodius (Calamosternus) granarius; Mulsant & Rey, 1871 (1870): 474; Balthasar, 1964: 434

TYPE LOCALITY: "Europa".

TYPE DEPOSITORY: probably Linnean Society collection. London (type not examined).

DESCRIPTION. Length 4-6 mm, elongate, subcylindrical, shiny, glabrous. Blackish; clypeal margin and legs brownish; sometimes elytra more or less widely brownish or reddish; seldom quite reddish. Head with epistome gibbous and regularly punctured, punctation subrugose distally, weakly transversely carinate anteriorly; clypeus depressed and sinuate at middle, rounded at sides; genae rounded, ciliate, feebly more protruding than eyes; frontal suture trituberculate. Pronotum convex, shiny; sparsely, irregularly, doubly punctured; larger punctures nearly missing on disc; hind angles obtusely rounded; sides and base distinctly bordered. Scutellum shiny, flat, sparsely and finely punctured. Elytra elongate, shiny, convex, subparallel-sided; striae distinct, moderately deep, crenulate; interstices flat, very finely, sparsely and irregularly punctured. Hind tibiae regularly elongate and segments of hind tarsi not plumped; their first segment nearly as long as superior apical spur of tibia as well as following two combined. Male: median tubercle of frontal suture relatively stronger; epistome distinctly carinate anteriorly; pronotum transverse. Female: median tubercle of frontal suture relatively weaker; epistome feebly carinate; pronotum narrowed frontward.

DISTRIBUTION. Subcosmopolitan.

Genus *CALOCOLOBOPTERUS* G. Dellacasa, 1986 **stat. nov.**

Aphodius (Calocolobopterus) G. Dellacasa, 1986: 216

TYPE SPECIES: *Aphodius senegalensis* Klug, 1835 (original designation).

DESCRIPTION. Large size species (length 8-16 mm), oblong, strongly convex, usually shiny, glabrous, rarely scutellum pubescent. Testaceous, pronotal and elytral disc often darker, sometimes quite blackish. Head with epistome shiny, more or less regularly punctured; clypeus anteriorly truncate or feebly sinuate at middle, distally upturned but indistinctly bordered, glabrous; genae rounded, shortly bristled, not or feebly more protruding than eyes; latter rather large; frontal suture faint. Pronotum transverse, strongly convex, usually shiny, irregularly and coarsely punctured; front margin strongly bordered only rarely without border; base not bordered. Scutellum large, triangularly elongate, concave, punctured. Elytra feebly flattened on disc, nearly regularly rounded at sides, with strong and deep striae, usually crenulate; interstices convex or flat, more or less distinctly punctured. Fore tibiae distally tridentate and proximally not serrulate at outer margin; upper side superficially and sparsely punctured. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules stout, rather elongate and irregularly unequal. Pygidium with few, sparse and very elongate discal setae; its apical margin elongately and rather sparsely ciliate. Sexual dimorphism

shown in males by epistome usually tuberculate and by impression at middle of front margin of pronotum. Aedeagus large, strongly sclerotized, with paramera elongate and smooth. Epipharynx with anterior margin deeply sinuate at middle; epitorma conical, more or less slender and usually not reaching front margin; corypha usually with two strong and elongate apical spiculae; chaetopariae stout and dense, arranged in two parallel belts.

DISTRIBUTION. Afrotropical region.

Calocolobopterus senegalensis (Klug, 1835) **n. comb.** (figs 433, 437-439)

Aphodius senegalensis Klug, in Erman's Reise, 1835: 34

Aphodius (*Colobopterus*) *senegalensis*; A. Schmidt, 1913: 119, Endrödi, 1960b: 106

Colobopterus (*Colobopterus*) *senegalensis*; Endrödi, 1964a: 40

Colobopterus senegalensis; Paulian, 1942: 22

Aphodius (*Calocolobopterus*) *senegalensis*; G. Dellacasa, 1986: 218

TYPE LOCALITY: Senegal.

TYPE DEPOSITORY: Zoologisches Museum, Humboldt Universität. Berlin (type not examined).

DESCRIPTION. Length 8-12 mm, oblong-oval, strongly convex, very shiny, glabrous. Testaceous; sides of pronotum and elytra yellowish; sometimes piceous with only front angles of pronotum and elytral apex testaceous. Head shiny; epistome rather finely and regularly punctured; clypeus rounded at sides, indistinctly bordered with distal margin more or less upturned; genae rounded, not more protruding than eyes; frontal suture nearly faint. Pronotum transverse, shiny, strongly convex, with double, rather fine and regular punctation; hind angles obtusely rounded; front and lateral margins thickly bordered; base with border interrupted at level of the fifth elytral interstice. Scutellum shiny, feebly concave, finely and shallowly punctured. Elytra very shining, with sides nearly regularly rounded, somewhat flattened on disc; striae very fine, almost not crenulate; interstices rather flat, with extremely fine and sparse punctation. First segment of hind tarsi shorter than superior apical spur of tibia and as long as following three combined. Male: clypeus anteriorly truncate and upturned; epistome with a strong conical tubercle, very finely and sparsely punctured; pronotum with a broad impression at middle of front margin, nearly smooth on disc. Female: clypeus anteriorly feebly sinuate not or slightly upturned; epistome gibbous without tubercle, relatively more coarsely and densely punctured; pronotum without front impression but with a longitudinal gibbosity at middle, relatively more coarsely and densely punctured on disc.

DISTRIBUTION. Afrotropical region.

Genus *CANDEZEOLLUS* Stebnicka & Howden, 1995

Candezeollus Stebnicka & Howden, 1995: 730

TYPE SPECIES: *Aphodius candezei* Harold, 1868 (original designation).

DESCRIPTION. Medium size species (length 6.5-7.5 mm) rather elongate, convex, shiny; glabrous, elytra more or less diffusedly pubescent. Brown- or red-yellowish, sometimes

elytra with several shaded darker spots. Head angustate frontward; epistome strongly gibbous, coarsely punctured; clypeus sinuate at middle, rounded at sides, indistinctly bordered but margin upturned and quite ciliate; genae obtusely angulate, ciliate, more protruding than eyes; latter medium sized; frontal suture grooved, usually only laterally tuberculate. Pronotum transverse, moderately convex, rather regularly punctured; lateral margins thinly bordered and elongately ciliate; basal margin thin, sometimes interrupted at middle. Scutellum small, triangular. Elytra oval-elongate, more or less diffusedly pubescent, not denticulate at shoulder, distinctly crenato-striate; interstices feebly convex, distinctly punctured. Fore tibiae distally tridentate and proximally feebly serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with spinules elongate and irregularly unequal. Pygidium with some discal and distal setae. Sexual dimorphism shown in males by pronotum relatively more transverse and less convex; fore tibiae more slender and elongate, their apical spur short, stout, spatulate; first segment of hind tarsi somewhat flattened and feebly denticulate at sides. Aedeagus with short paramera apically acuminate. Epipharynx transverse, feebly sinuate at middle of front margin; epitorma narrowly cylindrical; corypha with two large and elongate and two small and short apical spiculae; chaetopariae rather short; pedia finely pubescent; nesium strongly transverse.

DISTRIBUTION. Southern Australian region.

Candezeollus candezei (Harold, 1868) (figs 434, 440-442)

Aphodius candezei Harold, 1868b: 85

Aphodius (*Volinus*) *candezei*; A. Schmidt, 1913: 145

Aphodius (*Chilo thorax*) *candezei*; M. Dellacasa, 1988a (1987): 104

Candezeollus candezei; Stebnicka & Howden, 1995: 732

TYPE LOCALITY: "Adelaide" [Australia].

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (lectotype male examined).

DESCRIPTION. Length 6.5-7.5 mm, oblong-oval, convex, shiny; glabrous, elytra preapically shortly pubescent. Head and pronotum dark brown with paler margins; scutellum brown-yellowish with darker sides; elytra brown-yellowish with small post-discal dark brown shaded spots located on second to eighth interstices. Head angustate frontward; epistome strongly gibbous, nearly tuberculiform at centre, coarsely, regularly, simply and distally somewhat confusedly punctured; clypeus rather deeply sinuate at middle, widely rounded at sides, margin anteriorly upturned and quite ciliate; genae obtusely angulate, ciliate, more protruding than eyes; frontal suture grooved, rather weakly and transversely tuberculate at sides; front relatively more finely and sparsely punctured, faintly bigibbous near pronotum fore margin. Pronotum transverse, rather convex, nearly regularly, rather finely, simply punctured, with a trace of longitudinal unpunctured groove at middle on basal half; sides thinly bordered, border minutely crenulate, elongately unequally ciliate; hind angles widely slightly truncate; base thinly bordered, border feebly crenulate and nearly faint at middle. Scutellum sparsely punctured, at base wider than first two elytral interstices. Elytra oval-elongate, not

denticulate at shoulder, rather finely striate; striae crenulate; interstices feebly convex, finely but distinctly punctured, toward apex punctures shortly setigerous; epipleura nearly quite pubescent. Male: pronotum relatively more transverse and less convex; lateral tubercles of frontal suture more strong; fore tibiae more slender, feebly sinuate at inner margin, their apical spur short, spatulate and apically truncate; hind tibiae superior apical spur as long as first tarsal segment; latter as long as following three combined. Female: pronotum relatively narrower frontward and more convex; lateral tubercle of frontal suture nearly faint; fore tibiae stouter, their apical spur regularly acuminate toward apex; hind tibiae superior apical spur shorter than first tarsal segment; latter as long as following two combined.

DISTRIBUTION. South Australia.

Genus *CARINAULUS* Tesař, 1945 **stat. nov.**

Aphodius (*Carinaulus*) Tesař, 1945: 66; Balthasar, 1964: 44

TYPE SPECIES: *Aphodius vseteckai* Tesař, 1945 (original designation).

DESCRIPTION. Small or medium size species (length 4.5-6 mm), oval-elongate, more or less convex, shiny, glabrous. Blackish or piceous. Head with epistome gibbous, punctured; clypeus sinuate at middle, more or less rounded at sides, thinly bordered, border glabrous; genae obtusely rounded, ciliate, more protruding than eyes; latter medium sized; frontal suture tuberculate or mutic. Pronotum transverse, convex, coarsely punctured; sides and base distinctly bordered. Scutellum small, triangularly elongate. Elytra oval, broadly and deeply striate; striae largely punctured, distinctly crenulate; interstices tectiform, carinate at middle; sixth and eighth interstices joined each other on preapical declivity but therein not carinate. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side superficially microreticulate, impunctate. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with short and equal spinules. Pygidium with few, straight discal setae. Sexual dimorphism shown in males mainly by metasternal plate distinctly excavate. Aedeagus rather stout, with paramera membranous and shortly spinulose apically. Epipharynx transverse, fore margin sinuate at each side; epitorma triangular; corypha with six apical spiculae; pedia pubescent with some stouter spines antero-laterally scattered; chaetopariae slender and elongate.

DISTRIBUTION. Eastern Palearctic and Oriental region.

REMARKS. The species at present considered pertaining to this genus-group taxon badly need taxonomical revision mainly for ascertaining their correct systematic position.

Carinaulus vseteckai (Tesař, 1945) **n. comb.** (figs 435, 443-445)

Aphodius (*Carinaulus*) *vseteckai* Tesař, 1945: 66

TYPE LOCALITY: "Chung King, Szechwan, China centr."

TYPE DEPOSITORY: Tesař collection, Krajske Muzeum Vychodnich Cech. Hradec Kralove (type not examined).

DESCRIPTION. Length 4.5-6 mm; oval-elongate, convex, shiny, glabrous. Brown-blackish; clypeal margin, fore angles of pronotum and elytra somewhat paler; antennal club

piceous; legs brown-reddish. Head with epistome gibbous, microreticulate on disc, simply, regularly and rather densely punctured throughout, anteriorly with a feeble transverse carina; clypeus moderately and widely sinuate at middle, subangulate at sides; genae obtusely rounded, ciliate, more protruding than eyes; frontal suture finely impressed, trituberculate, the median tubercle distinctly raised but somewhat transverse, the lateral ones weaker and transverse; front more coarsely and densely punctured than epistome. Pronotum moderately transverse, rather strongly convex, superficially microreticulate; doubly, almost regularly and densely punctured; punctation somewhat confuse toward fore and hind angles; large umbilicate punctures twice or three times larger than small punctures; latter relatively more deeply impressed; sides parallel toward base, thinly bordered, border glabrous; hind angles widely obliquely truncate and slightly inwardly sinuate; base bisinuate, distinctly bordered. Scutellum basally microreticulate, sparsely irregularly punctured, subcarinate toward apex. Elytra oval, somewhat backwardly broadened, with a small denticle at shoulder; striae very broad and deep, with large transverse punctures, strongly crenulate; interstices tectiform, distinctly carinate at middle, superficially and very sparsely punctulate. Hind tibiae superior apical spur as long as first tarsal segment; latter slightly shorter than following three combined. Male: median tubercle of frontal suture stronger; metasternal plate distinctly excavate. Female median tubercle of frontal suture relatively weaker; metasternal plate nearly flat.

DISTRIBUTION. Central and Southern China.

REMARKS. We had the opportunity to study one male specimen only of this rare taxon from Yunnan, Weiboashan Mountains, collected in dung, in forest environment, and compared with type by Dr David Král (Praha).

Genus *CEPHALOCYCLUS* M. Dellacasa, Gordon & G. Dellacasa, 1998

Aphodius (*Platyderus*); A. Schmidt, 1913: 123 (nec *Platyderus* J. F. Stephens, 1828, Col. Carabidae) (*partim*)

Aphodius (*Platyderides*) A. Schmidt, 1916: 99 (*nomen novum*) (*partim*)

Cephalocyclus M. Dellacasa, Gordon & G. Dellacasa, 1998: 141

TYPE SPECIES: *Aphodius fuliginosus* Harold, 1863 (original designation).

DESCRIPTION. Medium size species (length 5-10 mm), moderately convex; dull, rarely shiny; elytra glabrous or more or less diffusedly pubescent. Piceous either pale or dark testaceous; elytra paler. Head with epistome nearly flat, punctured; clypeus nearly semicircular, faintly truncate or feebly sinuate at middle, widely rounded at sides, quite thinly bordered, border thickened at middle, elongately bristled at sides; genae strongly developed, abruptly angulate, not deflexed, bristled, much more protruding than eyes; latter medium sized; frontal suture finely impressed, not at all tuberculate. Pronotum widely transverse, explanate at sides; lateral margins thinly bordered, elongately bristled; hind angles quite rounded, feebly depressed; base bisinuate, not bordered. Scutellum small, triangular, flat, with few superficial punctures on base. Elytra moderately convex, oval-elongate, not denticulate at shoulder, more or less widened posteriorly and more or less strongly callose on preapical declivity, more or less diffusedly pubescent or nearly glabrous, usually rather dull; striae generally fine and

feebly or not at all crenulate; interstices flat, rarely convex, more or less distinctly punctured; epipleura strong, elongately bristled at least at two basal thirds. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules very elongate and irregularly unequal. Hind tibiae superior apical spur as long as or longer than first tarsal segment; latter as long as following three combined. Claws strong. Pygidium sparsely and granulosely punctured, punctures shortly and straightly setigerous; its apical margin subcrenulate at middle and therein with dense, fine and elongate cilia. Sexual dimorphism variable from species to species; in males, e. g., head wider and more flat; pronotum relatively more transverse; protibiae, modified or not, with apical spur usually short, stout and abruptly downward curved; middle tibiae inferior apical spur sometimes aberrant; middle tarsi normally shaped or strongly modified. Aedeagus with paramera rather short, curved and acuminate, or more or less rounded and membranous apically. Epipharynx transverse, strongly rounded at sides; anterior margin nearly straight; epitorma conical, at each side with a longitudinal row of stout spines; corypha slightly protruding beyond front margin, usually with apical clump of stout and elongate spiculae; pedia densely pubescent with several short, stout, scattered chaetae; chaetopariae moderately dense and moderately elongate.

DISTRIBUTION. Nearctic region (Arizona, New Mexico, Texas, Utah) and Mexican Transition Zone (Guatemala, Mexico).

Cephalocyclus fuliginosus (Harold, 1863) (figs 436, 450-452)

Aphodius fuliginosus Harold, 1863: 330

Aphodius (*Platyderus*) *fuliginosus*; A. Schmidt, 1913: 123

Aphodius (*Platyderides*) *fuliginosus*; A. Schmidt, 1922: 47

Cephalocyclus fuliginosus; M. Dellacasa, Gordon & G. Dellacasa, 1998: 142

TYPE LOCALITY: Mexico.

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (lectotype male examined).

DESCRIPTION. Length 5-7 mm; feebly convex, subshiny, elytra dull. Dark piceous, sometimes elytra paler. Head with epistome feebly convex, distinctly microreticulate, finely sparsely rather irregularly punctured; clypeus subsinuate at middle, widely rounded at sides, thinly bordered, border feebly upturned and elongately bristled; genae distinct, ciliate, more protruding than eyes; frontal suture distinct, faintly gibbous at middle and at sides. Pronotum widely transverse, with trace of longitudinal impression on disc, feebly convex, faintly flattened on sides, distinctly microreticulate, finely and very sparsely punctured; sides nearly faintly pubescent, bordered, border sparsely bristled; hind angles obtusely rounded; base distinctly bisinuate, not bordered. Scutellum elongate, flat, distinctly microreticulate, with few superficial punctures on base only. Elytra oval-elongate, feebly widened toward apex, finely striate; striae superficially punctured, subcrenulate; interstices flat, strongly microreticulate, sericeous; sparsely, irregularly and finely punctured, sparsely shortly pubescent toward apex; epipleura distinct, elongately bristled on basal three quarters; shoulder not denticulate. First

segment of hind tarsi as long as superior apical spur of tibiae as well as following three combined. Male: head widely transverse, genae sharply angulated, frontal suture relatively more distinct and raised; fore tibiae relatively more slender and elongate, their apical spur relatively stout and abruptly bent downward; segments of middle tarsi distinctly broadened, the first as long as following three combined, latter of equal length and apically subdentiform, the fifth plumped; claws stout, superior one flattened and subdenticulate at base. Female: head relatively less transverse, genae obtusely rounded, frontal suture nearly faint; epistome feebly gibbous; pronotum relatively narrowed frontward; fore tibiae relatively shorter and stouter; their apical spur slender and elongate, regularly straight; segments of middle tarsi and claws normally shaped.

DISTRIBUTION. Guatemala, Mexico.

Genus *CHILOTHORAX* Motschulsky, 1859

Chilo thorax Motschulsky, 1859a: 156; Ádám, 1994: 14

Aphodius (*Chilo thorax*); Bedel, 1911b: 379; G. Dellacasa, 1983: 215

Dimendius Olsoufieff *apud* Semenov & Medvedev, 1929: 86 (*nomen nudum*)

TYPE SPECIES: *Scarabaeus conspurcatus* Linné, 1758 (subsequent designation: G. Dellacasa, 1983).

DESCRIPTION. Small or medium size species (length 3-8 mm), moderately convex, shiny, usually glabrous, sometimes elytra pubescent apically. Blackish or brownish; rarely head and pronotum brown-reddish; latter often yellowish at sides; elytra yellow or testaceous, blackish spotted, spots usually with definite margins. Head with epistome moderately convex, strongly or finely punctured; clypeus more or less distinctly sinuate at middle, rounded at sides, thinly bordered, border glabrous; genae ciliate, often more protruding than eyes; latter rather small; frontal suture distinct, usually trituberculate. Pronotum transverse, sometimes strongly convex, rather densely punctured; hind angles obtuse, rarely rounded; sides and base bordered. Scutellum small, triangular, densely or sparsely punctured. Elytra elongate, usually subparallel-sided; striae distinctly punctured, often crenulate; interstices more or less convex, finely sparsely punctured, rarely with dense and moderately coarse punctation. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules elongate and irregularly unequal. First segment of hind tarsi generally as long as superior apical spur of tibia as well as following two combined. Pygidium with fine, dense and recumbent pubescence, mixed some elongate straight setae; its apical margin finely, densely and elongately ciliate. Sexual dimorphism shown in males by less dense punctation of epistome, by more distinct tubercles of frontal suture and by pronotum less convex, less densely punctured and not narrowed frontward. Aedeagus with elongate paramera usually membranous apically. Epipharynx transverse, broadly rounded at sides; epitorma conical or drop-shaped; corypha with stout apical spiculae protruding beyond front margin; pedia densely pubescent with several strong chaetae more or less irregularly mixed; chaetopariae rather short and densely arranged.

DISTRIBUTION. Holarctic, Oriental, Neotropical (?) and Afrotropical (?) region.

REMARKS. Ádám (1994) subdivided the genus-group *Chilo thorax* in three genera, i. e.: a) *Chilo thorax* Motschulsky, 1859 for *Aphodius connexus* (Mulsant, 1842) (= *paykulli* Bedel, 1908) and *Aphodius pictus* Sturm, 1805; b) *Dimendius* Semenov & Medvedev, 1929 for *Aphodius distinctus* (O.F. Müller, 1776) and *Aphodius melanostictus* (W. Schmidt, 1840); c) *Volinus* Mulsant & Rey, 1870 for *Aphodius equestris* (Panzer, 1798) [= *sticticus* (Panzer, 1798)] only, without giving any explanation to this new arrangement nor any discriminating character for the taxa involved.

We agree with the Hungarian author only in considering *Volinus* as separate genus-group taxon but, on the other hand, it seems impossible for us to accept the species-group names proposed by him (i. e. *connexus* and *equestris*) as well as to retain *Dimendius* valid genus-group name.

In fact, Semenov & Medvedev (1929: 86) recorded the "*nomen museale*" (nomen in litteris) *Aphodius* (*Dimendius*) *c-nigrum* Olsoufieff for their new species *Aphodius* (*Mendidius*) *eremobius* furtherly synonymized by Nikolajev (1976: 166) with *Aphodius* (*Chilo thorax*) *clausula* W. Koshantschikov, 1910, on the basis of the study of pertinent types. Therefore, obviously, the genus-group name *Dimendius* has to be considered mostly as "*nomen nudum*" and listed in the synonymy of *Chilo thorax*, provided that *Aphodius clausula* surely pertains to this genus.

Chilo thorax conspurcatus (Linné, 1758) **n. comb.** (figs 446, 453-455)

Scarabaeus conspurcatus Linné, 1758: 348

Aphodius conspurcatus; Erichson, 1848: 846

Aphodius (*Chilo thorax*) *conspurcatus*; A. Schmidt in Wytsman, 1910: 55; G. Dellacasa, 1983: 223

Aphodius (*Volinus*) *conspurcatus*; Landin, 1956b: 8 (type location)

TYPE LOCALITY: "Europa".

TYPE DEPOSITORY: Linnean Society collection. London (type not examined).

DESCRIPTION. Length 4-5 mm, oblong, convex, shiny, glabrous. Blackish, head with pale testaceous lateral spots; pronotum more or less widely reddish at sides; elytra pale yellowish with suture and seven longitudinal spots blackish; sometimes elytral spots reduced in number or variously joined each other. Head shiny; epistome convex, transversely subcarinate, coarsely, anteriorly subrugosely punctured; clypeus feebly sinuate at middle, rounded at sides; genae rounded, shortly sparsely bristled, more protruding than eyes; frontal suture tuberculate. Pronotum convex, transverse, shiny, sparsely doubly, distinctly punctured; sides very shortly bristled, thinly bordered; hind angles obtusely rounded; base bisinuate, quite thinly bordered. Scutellum wide, microreticulate, sparsely punctured. Elytra elongate, convex, subparallel-sided; striae fine, distinctly punctured, crenulate; interstices flat, shiny, superficially microreticulate, finely sparsely punctured, quite glabrous. First segment of hind tarsi longer than superior apical spur of tibia and nearly as long as following three combined. Male: tubercles of frontal suture relatively stronger; pronotum not narrowed frontward, more superficially and sparsely punctured on disc. Female: tubercles of frontal suture relatively weaker; pronotum narrowed frontward, more densely and coarsely punctured on disc.

DISTRIBUTION. Western Palearctic region.

Genus *CINACANTHUS* A. Schmidt, 1913

Aphodius (Cinacanthus) A. Schmidt, 1913: 121; G. Dellacasa, 1983: 240

Cinacanthus; Paulian, 1942: 60

TYPE SPECIES: *Aphodius militaris* LeConte, 1858 (subsequent designation: Paulian, 1942).

DESCRIPTION. Medium size species (length 6-7 mm), elongate, moderately convex, feebly shiny, nearly glabrous. Quite more or less dark chestnut-brown. Head with epistome distinctly convex, rugosely punctured; clypeus anteriorly truncate, bidenticulate and elongately ciliate at sides; genae rounded, ciliate, more protruding than eyes; latter medium sized; frontal suture not tuberculate. Pronotum transverse, distinctly, nearly regularly punctured; sides and base bordered and elongately bristled; hind angles broadly rounded. Scutellum small, triangular, sparsely, distinctly punctured. Elytra convex, somewhat widened backward; epipleura quite distinctly bristled; striae fine, not crenulate; interstices feebly convex, distinctly and sparsely punctured; pubescent apically. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules stout, moderately elongate and irregularly unequal. Pygidium with several, moderately elongate and straight discal setae; its apical margin rather shortly and finely ciliate. Sexual dimorphism shown in males, mainly by fore tibiae apical spur extremely reduced, not visible from above. Aedeagus with elongate, simple paramera. Epipharynx transverse, widely rounded at sides, bisinuate at front margin; epitorma chalice-shaped; corypha with moderately elongate and feebly protruding apical spiculae; pedia nearly quite glabrous, only toward corypha elongately and densely pubescent, with few stout chaetae serially arranged; chaetopariae dense and moderately elongate.

DISTRIBUTION. Western Nearctic region.

REMARKS. All Palearctic and Afrotropical species included so far into *Cinacanthus* do not surely pertain to this genus.

Cinacanthus militaris (LeConte, 1858) (figs 447, 456-458)

Aphodius militaris LeConte, 1858: 65

Aphodius (Cinacanthus) militaris; A. Schmidt, 1913: 121; G. Dellacasa, 1983: 241

Cinacanthus militaris; Paulian, 1942: 60

TYPE LOCALITY: San Diego, California [U.S.A.].

TYPE DEPOSITORY: Museum of comparative Zoology. Harvard University. Cambridge, MA (U.S.A.) (type not examined).

DESCRIPTION. Length 6-7 mm, oblong, moderately convex, feebly shiny, nearly glabrous. Quite dark chestnut-brown. Head with epistome distinctly gibbous, anteriorly rugosely, laterally subgranulately punctured; clypeus anteriorly truncate, with two upturned denticles and elongately bristled at sides; genae obtusely rounded, more protruding than eyes; frontal suture not tuberculate. Pronotum transverse, feebly convex, distinctly microreticulate, superficially, rather densely, subregularly punctured; sides bordered and

elongately bristled; hind angles widely rounded; base thinly bordered and shortly bristled. Scutellum triangularly elongate, finely microreticulate, sparsely, superficially punctured. Elytra elongate, moderately convex, somewhat widened backward; epipleura quite distinctly bristled; striae fine, superficially punctured, not crenulate; interstices nearly flat on disc, moderately convex laterally and toward apex, finely microreticulate, sparsely but distinctly punctured, shortly pubescent apically. Male: fore tibiae sinuately widened at inner margin with very small apical spur inserted inferiorly near at half of length; first segment of hind tarsi shorter than superior apical spur of tibia and near as long as following two combined. Female: fore tibiae straight at inner margin with slender and elongate apical spur, regularly inserted; first segment of hind tarsi near as long as superior apical spur of tibia and shorter than following two combined.

DISTRIBUTION. Western Nearctic region (from California to Nevada).

Genus *CNEMARGULUS* Semenov, 1903

Cnemargulus Semenov, 1903: 354; Medvedev & Nikritin, 1971: 1881; Pittino, 1984: 306; G. Dellacasa, 1990: 22

Cnemisus; A. Schmidt in Wytsman, 1910b: 13 (*partim*)

Cnemisus (*Cnemargulus*); Balthasar, 1964: 472

TYPE SPECIES: *Cnemargulus krulikovskyi* Semenov, 1903 (subsequent designation: Pittino, 1984).

DESCRIPTION. Small or medium size species (length 4-7 mm), elongate-oval, strongly convex, glabrous, shiny. Light testaceous, head, pronotum and elytral suture brownish. Head with epistome gibbous and granulate; clypeus quadridentate, distinctly bristled; genae auriculate, elongately ciliate, somewhat more protruding than eyes; latter rather large; frontal suture tuberculate. Pronotum transverse, finely and regularly punctured on disc, quite thinly bordered. Scutellum small, triangular. Elytra feebly dilatate posteriorly; striae subcrenulate; interstices nearly flat. Hind femora moderately widened, ventral face smooth and with a belt of scattered hairs near posterior margin. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. Middle tibiae at upper apical margin with a single very elongate seta near outer angle. Hind tibiae feebly widened apically, with two strong complete carinae on outer face; apically fimbriate with spinules very short and equal. Hind tarsi shorter than tibiae; first segment not plumped apically and only somewhat longer than second one. Claws corneous, thin, elongate, slightly curved. Pygidium with apical margin very elongately ciliate. Sexual dimorphism shown in males by more strong median tubercle of frontal suture, by parallel-sided pronotum as well as by more slender posterior tibiae. Aedeagus elongate with paramera more or less membranous and, in lateral view, distinctly acuminate apically. Epipharynx widely rounded at sides and distinctly sinuate at front margin; corypha with four short strong apical spiculae not more protruding beyond anterior margin; epitorma regularly oval; chaetopariae stout and moderately elongate; chaetopodia glabrous with few short very sparse spines.

DISTRIBUTION. South- and Central-eastern Palearctic region.

Cnemargulus krulikovskiy Semenov, 1903 (figs 448, 463-465)

Cnemargulus krulikovskiy Semenov, 1903: 354; M. Dellacasa, 1988a (1987): 150; G. Dellacasa, 1990d: 24

Cnemisus (*Cnemargulus*) *krulikovskiy*; Balthasar, 1964: 474

TYPE LOCALITY: "Prov. Transcaspica: Imam-baba near Merv" [Turkmenistan].

TYPE DEPOSITORY: Zoologicheskij Institut R. A. N. St. Petersburg (lectotype male examined)

DESCRIPTION. Length 4-5 mm, oval, convex, shiny, glabrous; testaceous with head, pronotum, legs and sutural margin of elytra brownish. Head shiny, epistome distinctly gibbous, quite strongly granulate; clypeus distinctly sinuate at middle, with four upturned teeth, two distal ones more sharp and prominent, with sparse short yellowish hairs all round; genae auriculate, feebly depressed, distinctly bristled, more protruding than eyes; frontal suture raised and more or less strongly tuberculate; front coarsely irregularly punctured. Pronotum transverse, strongly convex, shiny, quite distinctly and regularly punctured, completely thinly bordered; sides with elongate and sparse yellowish hairs; hind angles obtusely rounded. Scutellum elongate, distinctly punctured. Elytra oval-elongate, convex, shiny; striae fine, subcrenulate; interstices nearly flat, sparsely superficially punctured; humeral apex of epipleural carina visible from above. Middle tibiae with a single seta very elongate at upper margin. Hind tibiae superior apical spur longer than first tarsal segment. Male: shape relatively more parallel; central tubercle of frontal suture stronger; pronotum subparallel-sided; hind tibiae slender; first segment of hind tarsi longer than second. Female: shape relatively more widened posteriorly; central tubercle of frontal suture weaker; pronotum largely broadened at sides; hind tibiae stouter; first segment of hind tarsi nearly as long as second.

DISTRIBUTION. Turkmenistan.

Genus *CNEMISUS* Motschulsky, 1868

Cnemargus Motschulsky, 1845: 56 (nec *Cnemargus* Schönherr, 1837, Col. Curculionidae)

Cnemisus Motschulsky, 1868: 63 (*nomen novum*); A. Schmidt, 1922: 344 (*partim*); M. Dellacasa, 1988a (1987): 110; G. Dellacasa, 1990d: 26

Ahermes Reitter, 1891: 254; A. Schmidt in Wytsman, 1910b: 13 (as synonym of *Cnemisus*)

Cnemisus (*Cnemisus*); Balthasar, 1964: 471

TYPE SPECIES: *Cnemargus rufescens* Motschulsky, 1845 (monotypy).

DESCRIPTION. Medium size species (length 7-10 mm), subparallel, convex, nearly glabrous, shiny. Quite red-brownish. Head transverse, shiny; epistome strongly gibbous, glabrous, quite granulate, with tuberculiform central carina; clypeus sinuate or lobate at middle, distinctly ciliate, with four teeth at front margin and two more or less distinct denticles before genal sutures; genae ciliate, more protruding than eyes; latter rather large; frontal suture distinctly raised. Pronotum transverse, strongly convex, shiny, irregularly and coarsely punctured; base and sides distinctly bordered. Scutellum small, triangular. Elytra elongate, subparallel-sided, strongly convex, shiny, nearly quite glabrous; striae fine, superficial, subcrenulate; interstices almost flat, sparsely and

superficially punctured. All femora strongly widened, hind ones nearly disc-like, ventrally with distinct belt of dense and rather elongate hairs near posterior margin. Fore tibiae distally strongly tridentate and proximally not serrulate at outer margin; upper side finely and sparsely punctured; their apical spur elongate and curved downward in both sexes. Hind tibiae short, stout, triangularly strongly widened apically; outer face carinae strong and with dense and very short spines; apical spurs flattened, spoon-like, superior one obtusely, angularly curved inward; apical spinules at lower margin extremely short and of equal length. Claws setaceous. Pygidium rather elongately ciliate at apical margin. Sexual dimorphism shown in males by clypeal teeth relatively more sharp and strong, by pronotum not narrowed frontward and less densely punctured on disc. Aedeagus with elongate and strongly curved paramera. Epipharynx rounded at sides, widely sinuate and densely pubescent at middle of front margin; corypha without apical protruding spines; epitorma conical, acuminate apically; apophobae with many dense elongate setae near epipharyngeal front margin; chaetopariae dense and moderately elongate; chaetopodia scarcely pubescent posteriorly and with few, irregularly sparse, very short spines.

DISTRIBUTION. Central-eastern Palearctic region.

Cnemisus rufescens (Motschulsky, 1845) (figs 449, 466-468)

Cnemargus rufescens Motschulsky, 1845: 56

Cnemisus rufescens; Motschulsky, 1868: 63; A. Schmidt, 1922: 345; M. Dellacasa, 1988a (1987): 110; G. Dellacasa, 1990d: 27

Mendidius rufescens Reitter, 1888: 425

Ahermes rufescens; Reitter, 1891: 254; A. Schmidt in Wytsman, 1910b: 13 (as synonym of *rufescens* Motschulsky, 1845)

Cnemisus (Cnemisus) rufescens; Balthasar, 1964: 473

TYPE LOCALITY: "Volga inferieur" [Russia].

TYPE DEPOSITORY: Zoologicheskij Institut R. A. N. St. Petersburg (type male examined).

DESCRIPTION. Length 7-9 mm, subparallel, convex, shiny, nearly glabrous. Quite reddish; head, pronotum and legs feebly darker. Head transverse, shiny; epistome strongly gibbous, quite distinctly granulate, at center with a tuberculiform carina; clypeus at front margin with four teeth and with two denticles before genal sutures at least in males, regularly sinuate at middle, quite bordered, border distinctly upturned with moderately elongate hairs all round; genae somewhat depressed, obtusely rounded, more protruding than eyes, with elongate yellowish bristles; frontal suture strongly sharply raised, with trace of tubercle at middle; front irregularly and subrugosely granulate. Pronotum transverse, strongly convex, shiny, irregularly and coarsely punctured, punctures lacking near base; at middle with trace of smooth posterior longitudinal groove; base and sides thickly bordered, with more or less elongate yellowish hairs all round; hind angles obtusely rounded. Scutellum elongate, distinctly punctured basally. Elytra elongate, strongly convex, shiny, nearly glabrous, only at apex with short yellowish hairs, subparallel-sided; epipleura nearly quite and more or less shortly pubescent; striae fine, feebly crenulate; interstices nearly flat, finely and sparsely punctured on disc, relatively more densely punctured at apex. Middle tibiae apical spurs very elongate, distinctly

curved and apically acuminate. Hind tibiae short, strongly triangularly widened from base to apex; with two raised shortly bristled carinae on outer face; apical spurs flattened, spoon-like, superior one obliquely angulate and not very acuminate apically, distinctly longer than first tarsal segment; latter longer than following. Male: clypeal teeth, particularly pregenal denticles, more strong and sharp; pronotum relatively more transverse, less coarsely punctured on disc, not narrowed toward front margin; elytra subparallel-sided. Female: clypeal teeth less sharp and more weak, pregenal denticles near obsolete; pronotum narrowed toward front margin; elytra elongate-oval.

DISTRIBUTION. Southern Russia and Western Kazakhstan.

Genus *COELOTRACHELUS* A. Schmidt, 1913 **stat. nov.**

Aphodius (Coelotrachelus) A. Schmidt, 1913: 140; G. Dellacasa & Gordon, 1994: 153

TYPE SPECIES: *Aphodius kuntzeni* A. Schmidt, 1913 (original designation).

DESCRIPTION. Medium species (length 7-8 mm), elongate, moderately convex, shiny, glabrous. Quite piceous or brown-reddish. Head frontward arcuately narrowed; epistome feebly gibbous, very finely punctured; clypeus feebly sinuate at middle, obtusely denticulate at sides, not bordered but with lateral margins elongately bristled; genae obtuse, ciliate, more protruding than eyes; latter small; frontal suture finely impressed, not tuberculate. Pronotum strongly transverse, flattened laterally; finely and irregularly punctured on disc, largely, irregularly and coarsely punctured on sides; latter S-shaped, more or less narrowed toward base; hind angles obtusely dentiform; base thinly bordered. Scutellum small, triangular. Elytra elongate, feebly widened posteriorly; striae fine; interstices nearly flat. First segment of hind tarsi distinctly longer than superior apical spur of tibiae. Fore tibiae distally tridentate but proximally not serrulate at outer margin; upper side sparsely, irregularly and finely punctured. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules elongate and irregularly unequal. Pygidium with rather sparse, elongate and recumbent pubescence; its apical margin finely, sparsely and rather elongately ciliate. Sexual dimorphism shown in males by fore tibiae apical spurs hooked apically and by relatively less convex pronotum. Aedeagus rather elongate, strongly sclerotized, paramera curved and acuminate apically. Epipharynx distinctly sinuate at front margin, rounded at sides; corypha protruding frontward with several stout apical spinules; epitorma conical; pedia densely and widely pubescent, with posterior rows of short chaetae; chaetopariae rather short and densely arranged¹⁹.

DISTRIBUTION. Nearctic and Mexican Transition Zone.

Coelotrachelus kuntzeni (A. Schmidt, 1913) **n. comb.** (figs 459, 469-471)

Aphodius (Coelotrachelus) kuntzeni A. Schmidt, 1913: 140; G. Dellacasa & Gordon, 1994: 153

TYPE LOCALITY: Sierra de Durango (Mexico).

TYPE DEPOSITORY: Naturhistoriska Riksmuseet. Stockholm (type not examined).

¹⁹ The figure supplied by G. Dellacasa & Gordon (1994: 153) is lacking of corypha apical spiculae because they resulted broken in epipharynx of the old specimen dissected.

DESCRIPTION. Length 7-8 mm, elongate, shiny, moderately convex, glabrous. Piceous-black; head and pronotum shadowy piceous-reddish; antennae brown-reddish with blackish club; legs piceous, tarsi paler. Head transverse, arcuately narrowed frontward; epistome barely gibbous, finely regularly punctured; clypeus feebly sinuate at middle, obtusely denticulate and elongately sparsely ciliate at sides; genae obtusely rounded, rather densely and elongately bristled, strongly more protruding than eyes; frontal suture faintly impressed, not at all tuberculate. Pronotum strongly transverse, rather widely flattened on sides, faintly and finely punctured on disc, with large superficial punctures irregularly scattered laterally; sides thickly bordered, rounded, feebly depressed, S-shaped before hind angles and strongly narrowed till fourth elytral stria level; hind angles distinctly obtusely dentiform; base distinctly bisinuate, thinly bordered. Scutellum elongate, feebly impressed basally, nearly smooth. Elytra oval-elongate; shoulder not at all denticulate, elongately bristled; striae fine, nearly indistinctly punctured, faintly crenulate; interstices flat, apically slightly convex, faintly punctured. First segment of hind tarsi nearly twice longer than superior apical spur of tibiae and nearly as long as following three combined. Male: fore tibiae slender and relatively longer, apical spur hooked apically; pronotum less convex and more transverse. Female: fore tibiae stout and relatively shorter, apical spur regularly acuminate apically; pronotum more convex and less transverse.

DISTRIBUTION. Mexico.

Genus *COLOBOPTERIDIUS* Clément, 1958 **stat. nov.**

Colobopterus (*Colobopteridius*) Clément, 1958a: 1213

Colobopterus (Artengruppe *Colobopteridius*); Endrödi, 1964a: 32

Aphodius (*Colobopteridius*); G. Dellacasa, 1986: 227

TYPE SPECIES: *Colobopterus renaudi* Clément, 1958 (original designation).

DESCRIPTION. Medium size species (length 8-10 mm), subparallel-sided, longitudinally feebly flattened, rather dull. Testaceous; head, pronotum and elytral disc darker. Head moderately shining; epistome finely and almost irregularly punctured; clypeus anteriorly truncate, thinly bordered, border shortly bristled; genae rounded, shortly bristled; more protruding than eyes; latter medium sized; frontal suture trituberculate. Pronotum rather dull, strongly irregularly punctured, entirely bordered. Scutellum large, sunk, acuminate apically, punctured. Elytra dorsally flattened, truncate apically and rather imperceptibly pubescent on their apical third; striae crenulate; interstices basally convex, apically flattened; pygidium partially exposed. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with elongate and alternately unequal spinules. Pygidium with straight setae elongate. Sexual dimorphism shown in males by head with a strong clypeal horn curved backward and median tubercle of frontal suture strongly raised and protruding frontward; by pronotum with large impression at middle of front margin. Females are unknown but examining the small males it is possible to suppose that they could have the head with the front margin of clypeus truncate and only upturned at middle and the frontal suture carinate with faint tubercles; moreover the

median impression of front margin of pronotum could presumably lack. Aedeagus with tegmen strongly sclerotized and very stout, short and rounded apically paramera. Epipharynx strongly sinuate at middle of front margin, on each side of the sinuosity with a pair of rounded lobes; the subconical epitorma reaches the front margin; corypha with two very elongate spiculae strongly protruding beyond front margin; chaetopariae elongate and thick, the chaetae disposed in two parallel belts; chaetopodia with apophobae formed by short and irregularly sparse hairs.

DISTRIBUTION. Western Afrotropical region.

Colobopteridius renaudi (Clément, 1958) **n. comb.** (figs 460, 472-474)

Colobopterus (*Colobopteridius*) *renaudi* Clément, 1958a: 1213

Aphodius (*Colobopteridius*) *renaudi*; G. Dellacasa, 1986: 228

TYPE LOCALITY: Edéa (Cameroon).

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (type male examined).

MALE DESCRIPTION. Length 8-10 mm, large, subparallel-sided, longitudinally flattened, nearly glabrous, moderately shiny. Brown-reddish; tubercles of head, basal margin of pronotum and elytral suture darker; front angles of pronotum and antennal club pale testaceous; legs brownish. Head shining; epistome rather flat, with fine and irregularly scattered punctation; clypeus entirely thinly bordered; anteriorly truncate; angulate and upturned at each side; laterally bisinuate between front angles and genal canthus, at middle of front margin with a strongly raised and inwards curved horn; genae rounded, distinctly more protruding than eyes; frontal suture carinate and anteriorly near epistome with an obtuse, forwards protruding tubercle, on each side with one strong tubercle hanging above a deep round impression. Pronotum transverse, strongly gibbous on sides; completely and distinctly bordered; moderately shining, with three kinds of punctures; in the large anterior impression the punctation is rather fine and enough regularly scattered on a distinctly microreticulate ground; on remaining surface, nearly smooth, the punctation is double: formed by larger and umbilicate punctures mixed with small and irregular ones; sides distinctly sinuate before hind angles; latter rounded; base bisinuate, the border subcarinate at middle. Scutellum large, sunk, a little upturned at sides, strongly microreticulate, thus rather dull, with large, irregular and moderately coarse punctation, apically acuminate. Elytra somewhat dull, rounded at sides, narrowed towards apex, flattened on disc, with distinctly gibbous shoulder and subcarinate epipleura; striae broad, feebly impressed, with margin somewhat upturned, subcrenulate, the transverse punctures shallow, rather imperceptible apically; interstices moderately shining and strongly microreticulate on disc; moderately convex basally, flattened apically, throughout distinctly and strongly punctured; in their apical third shortly and sparsely pubescent. Transverse carinae of hind tibiae fimbriate with stout, strongly unequal spinules. First segment of hind tarsi as long as superior apical spur of tibia and as long as the following three combined. Female unknown.

DISTRIBUTION. Western Afrotropical region.

Genus *COLOBOPTEROIDES* Paulian, 1942*Colobopteroides* Paulian, 1942: 20*Aphodius* (*Colobopterus* Artengruppe *Colobopteroides*); Endrödi, 1960b: 101*Colobopterus* (Artengruppe *Colobopteroides*); Endrödi, 1964a: 31*Colobopterus* (*Colobopteroides*); Landin, 1974: 236*Aphodius* (*Colobopteroides*); G. Dellacasa, 1986: 269TYPE SPECIES: *Aphodius latus* A. Schmidt, 1911 (original designation).

DESCRIPTION. Small size species (length 4-5 mm), short, stout, strongly convex, moderately shiny, quite distinctly pubescent. Quite piceous black. Head with epistome gibbous, coarsely and vermiculately punctured; distinctly pubescent; clypeus sinuate a middle, rounded at sides, quite bordered, border glabrous; genae subauriculate, obtusely rounded, ciliate, more protruding than eyes; latter rather small; frontal suture nearly obsolete but with a conical median tubercle. Pronotum transverse, coarsely, irregularly and rugosely punctured, entirely strongly pubescent, base not bordered. Scutellum as long as one fifth of sutural margin of elytra; somewhat depressed. Elytra moderately flattened on disc, entirely densely pubescent; striae large and deep, subcarinate and crenulate at each side; interstices more or less convex. Fore tibiae distally tridentate and proximally feebly serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transversae carinae on outer face; apically fimbriate with spinules short and equal. Pygidium sparsely punctured, punctures rather shortly setigerous; its apical margin densely and elongately ciliate. Sexual dimorphism shown in males by more strong median tubercle of frontal suture and by fore tibiae apical spur relatively shorter and stouter. Aedeagus with paramera regularly elongate, rounded and broadened apically. Epipharynx rounded at sides, distinctly sinuate at front margin; epitorma widely drop-shaped; corypha much more protruding than front margin, with few short and stout apical spiculae; chaetopariae rather sparsely arranged.

DISTRIBUTION. North-eastern Afrotropical region.

Colobopteroides latus (A. Schmidt, 1911) (figs 461, 475-477)*Aphodius latus* A. Schmidt, 1911a: 29*Aphodius* (*Colobopterus*) *latus*; A. Schmidt, 1913: 119*Colobopteroides latus*; Paulian, 1942: 21*Colobopterus* (*Colobopteroides*) *latus*; Endrödi, 1964a: 32; Landin, 1974: 236*Aphodius* (*Colobopteroides*) *latus*; G. Dellacasa, 1986: 269

TYPE LOCALITY: "Choa" [Ethiopia].

TYPE DEPOSITORY: Naturhistoriska Riksmuseet. Stockholm (type not examined).

DESCRIPTION. Length 4-5 mm, short, oval, strongly convex, quite pubescent, moderately shiny. Piceous black. Head with epistome moderately gibbous, rugosely punctured, pubescent; clypeus distinctly sinuate at middle, rounded at each side, bordered, the border moderately upturned anteriorly; genae subauriculate, obtusely rounded, feebly more protruding than eyes; frontal suture nearly faint but with a distinct median conical tubercle, laterally obtusely raised only. Pronotum transverse, moderately shiny, anteriorly feebly narrowed, at middle of front margin with a superficial longitudinal

groove, on disc with short and sparse hairs, more dense on sides; punctation vermiculose, irregular and very coarse; sides rounded, sinuate before hind angles; latter obtuse; basal margin bisinuate, not bordered but with a belt of large and coarse punctures. Scutellum triangularly elongate, apically acuminate, confusedly punctured and with distinct longitudinal median carina. Elytra short and oval, moderately shiny; striae large and deep on disc, with irregularly upturned margins on each side, distinctly crenulate, the punctures transverse and not very deep; interstices smooth, strongly convex, with two lateral rows of rather dense yellowish hairs. First segment of hind tarsi longer than superior apical spur of tibiae and as long as following two combined. Male: median tubercle of frontal suture relatively stronger; fore tibiae apical spur relatively larger and stouter. Female: median tubercle of frontal suture relatively weaker; fore tibiae apical spur slender and acuminate.

DISTRIBUTION. North-eastern Afrotropical region.

Genus *COLOBOPTERUS* Mulsant, 1842

Colobopterus Mulsant, 1842: 165; Mulsant & Rey, 1871 (1870): 473; Paulian, 1942: 21; Ádám, 1994: 13

Coprimorphus (groupe *Colobopterus*); Mulsant & Rey, 1870b (1869): 395

Aphodius (*Colobopterus*); Reitter, 1892: 177; G. Dellacasa, 1983: 243; Balthasar, 1964: 30

Aphodius (*Colobopterus* Artengruppe *Colobopterus*); Endrödi, 1960b: 102

Colobopterus (Artengruppe *Colobopterus*); Endrödi, 1964a: 32

Colobopterus (*Colobopterus*); Landin, 1974: 233

Colobopterus (group *Colobopterus*); Endrödi & Rakovič, 1981: 35

TYPE SPECIES: *Scarabaeus erraticus* Linné, 1758 (monotypy).

DESCRIPTION. Medium size species (length 5-12 mm), convex, longitudinally flattened, feebly shiny, glabrous. Blackish, elytra yellowish, often with cloudy discal blackish spot or quite blackish. Head with epistome feebly gibbous or nearly flat, irregularly and usually coarsely punctured and, at least in males, tuberculate; clypeus feebly sinuate at middle, rounded at sides, entirely bordered, border glabrous; genae rounded, ciliate, more or less distinctly more protruding than eyes; latter medium sized; frontal suture finely impressed. Pronotum without impression at middle of front margin in both sexes, strongly convex, irregularly and doubly punctured; sides bordered; hind angles usually sinuately truncate; base bordered or not. Scutellum large, triangularly elongate, irregularly punctured and acuminate apically. Elytra flattened on disc, truncate apically so that pygidium is more or less distinctly exposed; striae shallow, often subcrenulate, sometimes with upturned margins; interstices flat or convex, the first sometimes carinate apically. Fore tibiae distally tridentate and proximally not serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with elongate and irregularly unequal spinules. Pygidium strongly microreticulate, dull, sparsely and shortly pubescent. Sexual dimorphism shown in males by epistome with a distinct tubercle at middle, by pronotum parallel-sided and less coarsely and less densely punctured. Aedeagus short, strongly sclerotized, with smooth and large paramera. Epipharynx cordiform, not abruptly sinuate at middle of front margin; epitorma narrowly subcylindrical; corypha usually with two more or

less elongate spiculae; chaetopariae arranged in two parallel and dense rows.

DISTRIBUTION. Holarctic and Oriental region.

Colobopterus erraticus (Linné, 1758) (figs 462, 478-480)

Scarabaeus erraticus Linné, 1758: 348

Colobopterus erraticus; Mulsant, 1842: 165; Paulian, 1942: 21; Ádám, 1994: 13

Aphodius (Colobopterus) erraticus; Reitter, 1892: 178; Landin, 1956b: 7 (type location); G. Dellacasa, 1983: 244

Colobopterus (Colobopterus) erraticus; Landin, 1974: 233

TYPE LOCALITY: "Europa" (restricted).

TYPE DEPOSITORY: Linnean Society collection. London (type not examined).

DESCRIPTION. Length 5-7 mm, short, subparallel-sided, glabrous, head and pronotum moderately shiny, elytra subopaque. Head, pronotum and scutellum black; elytra yellowish with brownish suture, sometimes with a cloudy central large spot or with elongate blackish strips, rarely with blackish lateral margins or quite blackish. Head with epistome slightly gibbous, coarsely and irregularly punctured, more or less distinctly tuberculate at centre; clypeus hardly sinuate at middle, rounded at sides; genae obtusely rounded, slightly more protruding than eyes; frontal suture bisinuate and distinctly impressed. Pronotum uniformly, rather coarsely, doubly and regularly punctured, the larger punctures slightly umbilicate; not microreticulate therefore rather shiny; hind angles truncate; sides and base strongly bordered. Scutellum triangularly elongate, slightly upturned at lateral margins, coarsely and rugosely punctured, almost smooth and subcarinate apically. Elytra subparallel-sided, narrowed backward, truncate apically, flattened on disc; striae shallow, subcrenulate, rather regularly punctured, punctures faint apically; interstices wide, moderately convex on disc, only the first subcarinate at apex, microreticulate and densely punctured. Hind tibiae superior apical spur as long as first tarsal segment; latter as long as following three combined. Male: median epistomal tubercle relatively stronger; pronotum transverse and parallel-sided. Female: median epistomal tubercle weaker; pronotum rather narrowed anteriorly.

DISTRIBUTION. Holarctic region.

Genus *COPRIMORPHUS* Mulsant, 1842

Coprimorphus Mulsant, 1842: 168; Ádám, 1994: 13

Aphodius (Coprimorphus); Reitter, 1892: 177 (as synonym of *Colobopterus*); G. Dellacasa, 1983: 246

TYPE SPECIES: *Scarabaeus scrutator* Herbst, 1789 (monotypy).

DESCRIPTION. Large size species (length 10-15 mm), oblong-elongate, parallel-sided, longitudinally flattened, moderately shiny, glabrous. Head and pronotum blackish, latter with more or less wide lateral reddish spots, rarely either quite blackish or quite reddish; elytra red, very rarely blackish; abdomen pale red. Head with epistome punctured; clypeus sinuate at middle, rounded at sides, entirely bordered, border glabrous; genae auriculate, shortly ciliate, more protruding than eyes; latter medium sized; frontal suture trituberculate. Pronotum strongly convex, moderately shiny, doubly punctured; anterior

margin thinly bordered; base thickly bordered. Scutellum triangularly elongate, as long as a seventh of sutural margin of elytra, punctured, carinate at middle. Elytra distinctly flattened on disc, subparallel-sided and with strong preapical gibbosity; striae crenulate; interstices flat and punctured. Fore tibiae distally tridentate and proximally not serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with spinules short and equal. Pygidium with rather sparse, moderately elongate, straight setae. Sexual dimorphism shown in males by tubercles of frontal suture relatively stronger; by pronotum with impression at middle of front margin; by fore tibiae apical spur stout and rounded apically. Aedeagus stout, with paramera short and strongly sclerotized. Epipharynx at front margin with pubescent lobes; epitorma conical; corypha with short apical spiculae; chaetopariae thin, dense and moderately elongate.

DISTRIBUTION. Western Palearctic region.

Coprimorphus scrutator (Herbst, 1789) (figs 481, 485-487)

Scarabaeus scrutator Herbst, 1789: 161

Coprimorphus scrutator; Mulsant, 1842: 168; Ádám, 1994: 13

Aphodius (Colobopterus) scrutator; Reitter, 1892: 177; G. Dellacasa, 1983: 246

TYPE LOCALITY: "Hungarn".

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 10-15 mm, oblong elongate, parallel, longitudinally flattened, moderately shiny, glabrous. Black; sides of pronotum, elytra and abdomen pale red; sometimes pronotum quite black or, very rarely quite reddish; elytra exceptionally quite blackish. Head with epistome shallowly and rather sparsely punctured, punctation barely dense anteriorly; clypeus feebly sinuate at middle, rounded at each side; genae auriculate, more protruding than eyes; frontal suture distinct and trituberculate. Pronotum strongly convex, moderately shining; doubly punctured, larger and irregularly sparse punctures mixed with many much smaller; front margin thinly bordered; hind angles obliquely truncate; base strongly bordered. Scutellum triangularly elongate; rather densely punctured, subcarinate apically. Elytra distinctly flattened on disc; nearly parallel-sided and abruptly narrowed towards apex; striae not very deep, crenulate; interstices flat, finely punctured. Hind tibiae superior apical spur shorter than first tarsal segment; latter as long as following four combined. Male: frontal suture strongly tuberculate, the median tubercle corniculate; pronotum with impression at middle of front margin; fore tibiae apical spur stout and rounded apically. Female: frontal suture with relatively weaker tubercles; pronotum without impression; fore tibiae apical spur slender and acuminate apically.

DISTRIBUTION. Central and South-western Europe, Asia Minor, Caucasus.

Genus *COPTOCHIROIDES* Balthasar, 1938 **stat. nov.**

Aphodius (Coptochiroides) Balthasar, 1938a: 210

TYPE SPECIES: *Aphodius guntherschmidtii* Balthasar, 1938 (junior synonym of *Aphodius subcostatus* Kolbe, 1886) (monotypy).

DESCRIPTION. Small species (length 4-5 mm), oval-elongate, moderately convex, shiny, glabrous. Head and pronotum blackish; elytra brown-yellowish. Head with epistome gibbous, doubly punctured; clypeus sinuate at middle, rounded at sides, quite thinly bordered, border not bristled; genae obtusely rounded, ciliate, more protruding than eyes; letter rather large; frontal suture impressed, not tuberculate. Pronotum transverse, doubly punctured; lateral margins and hind angles bordered; base feebly bisinuate, not bordered. Scutellum small, triangular. Elytra without humeral tooth; striae distinctly punctured, widened and not joined each other toward apex; interstices punctured. Fore tibiae distally tridentate and proximally not serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with spinules rather stout, moderately elongate and irregularly unequal. Hind tibiae superior apical spur shorter or as long as first segment of tarsi. Pygidium elongately pubescent. Sexual dimorphism shown in males by a strong tooth at half of fore tibiae inner margin; their apical spur curved at apex as well as inferior apical spur of middle tibiae. Aedeagus bodiliform, paramera short, tegmen strongly elongate. Epipharynx bisinuate at anterior margin; epitorma drop-shaped; corypha with six strong apical spines; pedia finely pubescent with some more strong setae mixed; chaetopariae slender and rather elongate; tormae elongate.

DISTRIBUTION. Eastern Palearctic region.

Coptochiroides subcostatus (Kolbe, 1886) **n. comb.** (figs 482, 488-490)

Aphodius subcostatus Kolbe, 1886: 189

Aphodius (*Pharaphodius*) *subcostatus*; A. Schmidt, 1913: 125

Aphodius (*Coptochiroides*) *guntherschmidti* Balthasar, 1938a: 210; Balthasar, 1952b: 227 (synonym of *subcostatus* Kolbe, 1886)

TYPE LOCALITY: Söul, Korea.

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION: length 4-5 mm, oval-elongate, moderately convex, shiny, glabrous. More or less pale brownish; front, pronotal disc, elytral suture and lateral margins dark brown. Head with epistome doubly irregularly punctured, smaller punctures sparse throughout, large punctures, twice or three times larger than small punctures, more irregularly scattered; clypeus feebly sinuate at middle, rounded at sides; genae obtusely rounded, ciliate, more protruding than eyes; frontal suture distinctly impressed, not tuberculate. Pronotum doubly punctured, size of punctation like that of head but larger punctures somewhat larger and placed distally on disc; lateral margins and hind angles distinctly bordered. Elytra finely striate; striae distinctly crenulate; interstices feebly convex. Elytral striae apically widened, nearly faintly punctured; interstices thinly bordered at sides. Hind tibiae superior apical spur as long as first tarsal segment; latter as long as following two combined. Male: head relatively more transverse; clypeus somewhat more distinctly sinuate at middle; pronotum regularly rounded at sides; fore tibiae with a distinct tooth at half of inner margin; their apical spur stout and curved apically, as well as inferior apical spur of middle tibiae. Female: head relatively narrower; clypeus faintly sinuate at middle; pronotum parallel-sided; fore tibiae without a tooth at half of

inner margin; their apical spur slender and straight as well as inferior apical spur of middle tibiae.

DISTRIBUTION. Eastern Palearctic and Oriental region.

Genus *CRATEROCYPHUS* A. Schmidt, 1913

Aphodius (*Craterocyphus*) A. Schmidt, 1913: 129; M. Dellacasa, 1988a (1987): 237

Aphodius (*Craterocephalus*) A. Schmidt, 1916: 111 (incorrect spelling pro *Craterocyphus*; anyway nec *Craterocephalus* McCulloch, 1912, Pisces)

Aphodius (*Hauserius*) Balthasar, 1935: 70 (n. syn.?)

Craterocyphus; Paulian, 1942: 62

Aphodius (*Aphodius* Artengruppe *Craterocyphus*); Endrödi, 1960b: 171

Aphodius (Artengruppe *Craterocyphus*); Endrödi, 1964a: 206

Aphodius (group *Craterocyphus*); Endrödi & Rakovič, 1981: 48

TYPE SPECIES: *Aphodius magnificus* A. Schmidt, 1909 (subsequent designation: Paulian, 1942).

DESCRIPTION. Medium size species (length 7.5-11.5 mm), oval-elongate, convex, shiny, glabrous. Head and pronotum dark brown-reddish; sometimes elytra pale brown-reddish or pale brown-yellowish. Head with epistome anteriorly, more or less strongly corniculate or strongly gibbous, punctured; clypeus subtruncate, rounded at sides, very thinly bordered, border glabrous; genae obtuse, shortly ciliate, more protruding than eyes; latter rather large; frontal suture with lateral tubercles more or less raised. Pronotum transverse, fore and lateral margins distinctly bordered; base bisinuate, thinly bordered. Scutellum small, triangular. Elytra oval-elongate, the greater width at half; shoulder not denticulate; striae rather finely punctured, the first one somewhat wider than second on preapical declivity, the ninth one not joined with the tenth before shoulder. Fore tibiae distally tridentate and proximally feebly serrulate at outer margin; upper side distinctly and rather densely punctured. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with spinules elongate and alternately unequal. Middle and hind tarsi longer or as long as tibiae. Pygidium with apical margin sparsely and elongately ciliate. Sexual dimorphism accentuate in males by epistome anteriorly with a horn-like process variously shaped basally and apically; by pronotum anteriorly strongly and widely impressed, the impression limited posteriorly by a median horn-shaped tubercle more or less raised; by punctation of head and pronotum relatively finer. Aedeagus with paramera more or less strongly elongate and with a small membranous apical process. Epipharynx transverse with anterior margin nearly straight; epitorma nearly faint; corypha with four large apical spiculae; chaetoparia slender, dense, widened till posterior epipharyngeal margin; pedia pubescent with stronger antero-lateral chaetae.

DISTRIBUTION. Afrotropical region.

REMARKS. We have not had the chance to study the type of *Aphodius* (*Hauserius*) *ikhutanus* but one of us (Bordat) examined a female specimen identified as *ikhutanus* and pertaining to Balthasar collection. Its taxonomical characteristics perfectly fit those recorded in original diagnosis and therefore we reasonably retain *Hauserius* identical to

Craterocyphus but the synonymy is herein proposed doubtfully only because lacking the study of a male type specimen of *Aphodius ikhutanus*.

It is practically impossible to identify the female specimens of *Craterocyphus* at species level because, in our opinion, they are lacking of any discriminating character.

Craterocyphus magnificus (A. Schmidt, 1909) (figs 483, 491-493)

Aphodius magnificus A. Schmidt, 1909c: 108; M. Dellacasa, 1988a (1987): 158

Aphodius (Craterocyphus) magnificus; A. Schmidt, 1913: 129

Craterocyphus magnificus; Paulian, 1942: 62

TYPE LOCALITY: "Abessinien" [Ethiopia].

TYPE DEPOSITORY: Naturhistoriska Riksmuseet. Stockholm (holotype male examined).

DESCRIPTION. Length 11-11.5 mm, oval-elongate, convex, shiny, glabrous. Dark brown-reddish; clypeal margin, fore angles of pronotum and elytra paler. Head rather wide; epistome doubly punctured, finer and regular punctures throughout scattered, large punctures, twice to three times larger than small punctures, irregularly sparse laterally; clypeus subtruncate anteriorly, widely rounded at sides and with border slightly upturned; genae obtusely rounded, strongly more protruding than eyes; frontal suture finely impressed. Pronotum punctured as head, but larger punctures placed toward front margin, laterally and toward base; sides posteriorly subparallel and, as well as hind rounded angles, thickly bordered. Scutellum sparsely and finely punctured on basal half. Elytra with striae slightly crenulate, entirely equally wide and not joined among them preapically; interstices feebly convex, sparsely and very finely punctured. Hind tibiae superior apical spur somewhat longer than first tarsal segment; latter slightly longer than following two combined. Male: epistome anteriorly with a strong horn-form process; in frontal view it appears feebly trapezoidal, widened at base, abruptly narrowed and parallel-sided at apical fifth, rounded at tip; in lateral view it is recumbent and triangularly broadened at apex; horn base is thickened by a wide carina beginning at three quarters of the high and progressively joining the middle of frontal suture; pronotum faintly bordered at middle of anterior margin, widely and deeply impressed from latter to the basal third, the impression proximally provided with a strong median horn. Female: epistome and pronotum without horn-shaped processes.

DISTRIBUTION. Ethiopia, Tanzania (beyond the holotype we have studied only one male specimen from Neu Moschi, Kilimandjaro, preserved in Paris Museum).

Genus *DIALYTELLUS* W. J. Brown, 1929

Dialytellus W. J. Brown, 1929c: 211; G. Dellacasa & Gordon, 1997: 360

TYPE SPECIES: *Aphodius humeralis* LeConte, 1878 (original designation).

DESCRIPTION. Small size species (length 3-4 mm); oblong, strongly convex, very shiny, glabrous. Blackish. Head very wide, strongly deflexed; epistome feebly gibbous, either unpunctured and finely alutaceous or densely and rather coarsely punctured; clypeus slightly sinuate at middle, rounded at sides, rather thinly bordered, border glabrous; genae angulate, either not or scarcely ciliate, more protruding than eyes; latter rather

small; frontal suture fine, not tuberculate. Pronotum strongly convex, polished, either very sparsely and coarsely punctured or strongly, irregularly and rather densely punctured; nearly parallel-sided; sides sinuate before hind angles; latter truncate and inward sinuate; base deeply grooved before margin, the groove coarsely punctured. Scutellum small, triangular, elongate. Elytra oval, somewhat narrowed toward base; strongly denticulate at shoulder; striae deep, crenulate with large distant punctures; interstices more or less wide, moderately convex, smooth. Fore tibiae distinctly tridentate at outer margin, obliquely truncate at front margin, upper side smooth. Middle and hind tibiae nearly straight, rather slender, gradually and slightly widened toward apex, with feeble transverse carinae on outer face; apically fimbriate with rather short but irregularly unequal spinules. Pygidium with rather dense, short and recumbent pubescence; its apical margin sparsely and somewhat elongately ciliate. Sexual dimorphism shown in males by different shape of fore tibiae apical spur and by more deeply incavate metasternal plate. Aedeagus slender with paramera sinuate, acuminate and upturned apically. Epipharynx transverse, slightly bisinuate at front margin, widely rounded at sides; epitorma broadly campaniform; corypha with short, stout and feebly prominent apical spiculae; chaetopariae stout, elongate and rather densely arranged; pedia sparsely and elongately pubescent, with a lateral row of strong chaetae.

DISTRIBUTION. Northern Nearctic region.

Dialytellus humeralis (LeConte, 1878) (figs 484, 498-500)

Aphodius humeralis LeConte, 1878: 459

Aphodius (*Stenobronchus*) *tragicus* A. Schmidt, 1916: 97 (*nomen novum innecessum*); A. Schmidt, 1922: 43 (*nomen novum innecessum duplicatum?*)

Dialytellus humeralis; W. J. Brown, 1929c: 211; G. Dellacasa & Gordon, 1997: 361

Aphodius (*Stenobronchus*) *lecontei* Balthasar, 1941a: 93 (*nomen novum innecessum*)

TYPE LOCALITY: Detroit, Michigan (U.S.A.).

TYPE DEPOSITORY: Museum of Comparative Zoology, Harvard University. Cambridge, MA (U.S.A.) (type not examined).

DESCRIPTION. Length 3.5-4 mm; oblong, stout, convex, very shiny, glabrous. Black; clypeal margin, antennae and legs brown-reddish. Head very wide, distinctly deflexed; epistome finely alutaceous, nearly unpunctured; clypeus slightly sinuate at middle, widely rounded at sides, thinly bordered; genae obtusely angulate, much more protruding than eyes; frontal suture finely impressed, not at all tuberculate; front with few, large, sparsely and irregularly scattered punctures. Pronotum transverse, strongly convex, highly polished, with few large punctures basally and laterally sparsely scattered, mixed punctures relatively much smaller, smooth anteriorly on disc; sides subparallel, distinctly bordered, distinctly sinuate before hind angles; latter obliquely truncate and widely inward sinuate; base deeply grooved before margin, the groove with a row of contiguous coarse and rather irregular punctures, thickly bordered, border distinctly crenulate. Scutellum elongate, slightly convex, sparsely and superficially punctured near base only. Elytra oval, strongly convex, very shiny, slightly narrowed toward base; shoulder prominently denticulate; striae deep, marked by large remote punctures; interstices

moderately convex, smooth. Middle tibiae inferior apical spur very short, stout and inwardly prominent. Hind tibiae superior apical spur as long as half of first tarsal segment; latter somewhat longer than following three combined. Male: fore tibiae apical spur gradually narrowed toward apex and distinctly curved inwardly; metasternal plate deeply concave. Female: fore tibiae apical spur slender and straight; metasternal plate nearly flat.

DISTRIBUTION. Southern Canada (Ontario), Northern U.S.A. (North Carolina, Maryland, Michigan).

NOMENCLATURAL REMARKS. Adolf Schmidt (1916) created the new name *tragicus* for *Aphodius humeralis* LeConte, 1878, considering it homonym of *Otophorus haemorrhoidalis* var. *humeralis* Mulsant, 1842 - then *Aphodius (Otophorus) haemorrhoidalis* ab. *humeralis* - following the nomenclatural rules at that time in force.

In 1920, A. Schmidt described another species with the same name, i.e.: *Aphodius (Oromus) tragicus* from "Abessinien" (Arch. Naturg., 86A: 141).

Apparently A. Schmidt himself, in his monographic work on Aphodiinae (Tierreich 45, 1922), omitted his previous (1916) nomenclatural decision, and, on page 43, it seems that he created again the new name *tragicus* for *Aphodius humeralis* LeConte. On the contrary, in the "Nachtrag" at page 549, he refers to his 1916 decision.

Balthasar (1941) overviewed A. Schmidt's 1916 paper as well as the 1922 "Nachtrag" reference and, on priority basis, considering valid *Aphodius (Oromus) tragicus* A. Schmidt, 1920, formulated another new name for *Aphodius (Stenobronchus) tragicus* A. Schmidt, 1922, i. e.: *Aphodius (Stenobronchus) lecontei*.

J. W. Brown, in 1929, described the new genus *Dialytellus* designing as its type species *Aphodius humeralis* LeConte.

Aphodius humeralis LeConte, 1878, and *Otophorus haemorrhoidalis* var. *humeralis* Mulsant, 1842, are obviously secondary homonyms because the two taxa were not congeneric at times of respective original descriptions. We retain therefore that *Aphodius humeralis* LeConte has to be conserved as valid name of the taxon involved even though the provisions of ICZN [art. 59.3] state otherwise.

Genus *DIALYTES* Harold, 1869

Dialytes Harold, 1869a: 101; A. Schmidt in Wytsman, 1910b: 113 (Eupariina); Paulian, 1945: 179; Stebnicka, 1994: 72 (Aphodiini); G. Dellacasa & Gordon, 1997: 364

TYPE SPECIES: *Trox striatulus* Say 1825 (subsequent designation: Paulian, 1945).

DESCRIPTION. Rather small or medium size species (length 4-6 mm); oblong, strongly convex, glabrous, head and pronotum nearly dull, elytra rather shiny. Piceous-brownish, antennae and legs reddish. Head with epistome strongly gibbous, coarsely but rather sparsely punctured; clypeus semihexagonal, broadly sinuate at middle, obtusely angulate at sides, angles upturned, faintly bordered, border glabrous; genae small, rounded, ciliate, somewhat more protruding than eyes; latter rather small; frontal suture not tuberculate; front cribrately punctured; first three segments of antennae rather elongate, following three distinctly transverse, club segments large and densely pubescent. Pronotum convex, subquadrate, slightly narrowed anteriorly; broadly longitudinally grooved at middle,

foveolate at sides, quite regularly coarsely cribrately punctured; front angles prominent; sides slightly sinuate before hind angles; latter obliquely truncate and inward sinuate; base either thinly or not at all bordered. Elytra oval, strongly convex; shoulder not denticulate but frontward prominent; interstices elevated in acute carinae; pseudostriae concave, with row of superficial coarse punctures. Fore tibiae distal outer teeth, excepting apical tooth, nearly obsolete, in addition there is a tooth at front margin, near tarsal insertion but fore tibiae are not proximally serrulate at outer margin; upper sides smooth. Middle and hind tibiae with feeble transverse carinae on outer face and apically fimbriate with stout, rather short but irregularly unequal spinules. Pygidium regularly and coarsely punctured, densely pubescent; its apical margin sparsely and rather elongately ciliate. Sexual dimorphism shown in males by the strongly concave metasternal plate. Aedeagus rather stout; paramera, in lateral view, strongly curved apically. Epipharynx transverse, bisinuate at front margin, widely rounded at sides; epitorma broad, upturned chalice-shaped; corypha with several elongate spiculae distinctly prominent; pedia elongately pubescent, with strong spines rather irregularly mixed; chaetopariae slender, elongate and densely arranged.

DISTRIBUTION. Nearctic region.

Dialytes striatulus (Say, 1825) (figs 494, 501-503)

Trox striatulus Say, 1825: 192

Dialytes striatulus; Harold, 1869a: 101; Stebnicka, 1994: 73; G. Dellacasa & Gordon, 1997: 364

TYPE LOCALITY: "Pennsylvania" [U.S.A.].

TYPE DEPOSITORY: unknown to authors; type probably lost.

DESCRIPTION. Length 4-5 mm; oblong, slightly broader behind, convex, glabrous; head and pronotum nearly dull, elytra rather shiny. Piceous-brown, antennae and legs reddish. Head deflexed; epistome gibbous, coarsely but rather sparsely punctured, punctation more dense at sides; clypeus feebly and widely sinuate at middle, obtusely angulate at sides, quite thinly bordered, border upturned at front angles; genae very small, sparsely ciliate, somewhat more protruding than eyes; frontal line indicated by a row of deeper punctures only; front coarsely densely punctured. Pronotum convex, little wider than long, slightly narrowed anteriorly, coarsely cribrate, nearly regularly punctured, with a median longitudinal groove broad and deeply impressed laying from base nearly up to front margin and with two rather superficial oval impressions on sides; anterior angles nearly straight; sides thinly bordered, slightly sinuate before hind angles; latter truncate; base feebly bisinuate, thinly bordered, border marked by a row of strong contiguous punctures. Scutellum alutaceous, elongate, nearly flat, unpunctured. Elytra oval, convex, not denticulate at shoulder but prominent frontward; interstices elevated in acute carinae; pseudostriae concave, with row of large superficial punctures. Metasternal plate coarsely, densely punctured. Fore tibiae very wide, with second and third distal tooth at outer margin nearly obsolete, existing in faintest trace only, the first distinct; an additional tooth at front margin near tarsal insertion; the downward curved apical spur somewhat shorter than first segment of tarsi. Middle tibiae inferior apical spur shortened and hooked in both sexes. Male: metasternal plate relatively more deeply concave and

more densely punctured. Female: metasternal plate relatively more feebly concave and more sparsely punctured.

DISTRIBUTION. Eastern Canada and U.S.A.(up to Georgia, West to Manitoba and Iowa).

Genus *DIAPTERNA* Horn, 1887 **stat. nov.**

Brachyproctus Motschulsky, 1860: 42 (**n. syn.?**; *nomen nudum* thus, therefore, invalid name)

Aphodius (*Diapterna*) Horn, 1887: 4; W. J. Brown, 1929b: 224; G. Dellacasa, 1986: 230

TYPE SPECIES: *Aphodius hamatus* Say, 1824 (subsequent designation: W. J. Brown, 1929).

DESCRIPTION. Small or medium size species (length 4-8 mm), elongate, subparallel-sided, strongly convex, glabrous, shiny, sometimes elytra alutaceous. Blackish or piceous; sometimes elytra yellowish either with large discal spot or with longitudinal stripes brownish. Head with epistome more or less gibbous or almost flat; finely, often indistinctly punctured, rarely with few coarse lateral punctures; clypeus feebly sinuate at middle or anteriorly subtruncate, rounded at sides, distinctly bordered, border glabrous and often upturned; genae obtusely rounded, ciliate, more protruding than eyes; latter medium sized; genal sutures always distinct; frontal suture not tuberculate, more or less evident, rarely obsolete. Pronotum convex, shiny, usually transverse, with very fine punctures scattered particularly on disc, with coarse punctures on the sides and usually near base at middle; anterior angles very broadly rounded; sides bordered, arcuate, usually more strongly anteriorly, obliquely subsinuate before hind angles; latter obtuse, sometimes distinctly prominent; base bordered or not, border generally broadly interrupted at middle; basal margin bisinuate or not. Scutellum large, triangularly elongate, generally feebly concave with a trace of longitudinal groove, rarely feebly convex and without longitudinal groove, apically acuminate, finely and sparsely punctured. Elytra rather regularly convex, more or less shining, usually with feebly crenulate striae; interstices flat or moderately convex. Fore tibiae distally tridentate and proximally serrulate at outer margin, upper side sparsely but distinctly punctured. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with elongate and irregularly unequal spinules. Pygidium coarsely and rugosely punctured, rather shortly and densely pubescent. Sexual dimorphism shown in males by pronotal sides often more strongly arcuate; fore tibiae apical spur spatulate, apically either downward turned or not; inferior spur of middle tibiae long about one third than superior, stout, apically truncate; first segment of hind tarsi with a large recurrent process directed obliquely toward base so V-shaped. Females fore tibiae apical spur normal, moderately stout, scarcely curved, narrowed apically, the apex acute; inferior apical spur of middle tibiae long about two thirds than superior and apically acuminate; first segment of hind tarsi normal. Aedeagus strongly sclerotized, tegmen elongate, basally inflate and with short paramera curved apically, in lateral view very acuminate. Epipharynx at front margin with more or less evident pubescent lobes; epitorma more or less regularly conical; corypha nearly always protruding above and with several apical spiculae; pedia almost elongately and densely pubescent; chaetopariae rather elongate and densely arranged.

DISTRIBUTION. Nearctic and Mexican Transition Zone.

REMARKS. The genus-group name *Brachyproctus* was created by Motschulsky (1860) for taxa with large scutellum, short elytra and hind tibiae fimbriate with unequal apical spinules but not any species-group taxon was indicated as pertaining to the new genus.

Because the characters complex sufficiently fits that of *Diapterna*, we herein doubtfully record *Brachyproctus* in the synonymy of the former.

Diapterna hamata (Say, 1824) **n. comb.** (figs 495, 504-506)

Aphodius hamatus Say, 1824: 277

Aphodius (Diapterna) hamatus; Horn, 1887: 5; W. J. Brown, 1929b: 225; G. Dellacasa, 1986: 239

TYPE LOCALITY: "Northwest Territory" [U.S.A.].

TYPE DEPOSITORY: unknown to authors; type probably lost.

DESCRIPTION. Length 6-8 mm, rather short, convex, nearly dull, glabrous. Blackish; elytra with brownish cloudy discal spot excluding second interstice, base, apex and striae yellowish; sometimes the cloudy discal spot reduced to few narrow longitudinal stripes on several interstices; rarely elytra quite brownish. Head with epistome feebly gibbous, very finely and sparsely, rather indistinctly punctured; clypeus broadly and very feebly sinuate at middle, quite bordered, border laterally narrow, broad and upturned at middle; genae largely rounded, with long pale bristles; genal sutures almost indistinct; frontal suture marked by two impressed lateral lines. Pronotum subquadrate, with fine punctation more distinct on disc, the coarse punctures very sparse on sides, barely scattered over the middle near base; sides moderately arcuate and quite strongly bordered; base with border strong, broadly interrupted at middle and usually separated from side border, with a belt of coarse punctures; basal margin not sinuate before hind angles; latter distinct and obtuse. Scutellum elongate, apically acuminate, with a trace of central groove; throughout sparsely and finely punctured. Elytra regularly convex, apically subtruncate; striae almost moderately impressed, distinctly punctured, not crenulate; interstices almost flat, enough dulled by the very fine alutaceous sculpture, very finely, sparsely and indistinctly punctured, with a more or less distinct impressed marginal line near striae. First segment of hind tarsi shorter than following three combined, sometimes equal to these in the female. Male: fore tibiae apical spur broadly spatulate and apically downward bent; sides of pronotum somewhat strongly arcuate, coarse punctures of frontal disc extremely sparse; first segment of hind tarsi V-shaped. Female: fore tibiae apical spur slender and apically acuminate; sides of pronotum relatively more arcuate; coarse pronotal disc punctures very sparsely arranged but in relatively larger number; first segment of hind tarsi normal.

DISTRIBUTION. Canada (Alberta, British Columbia, Manitoba, Quebec, Saskatchewan), U.S.A. (California, Michigan, Montana, North Dakota, Oregon, Washington T., Wyoming, Idaho).

Genus *DOAPHIUS* Balthasar, 1941

Doaphius Balthasar, 1941b: 172

TYPE SPECIES: *Doaphius rufopolitus* Balthasar, 1941 (monotypy).

DESCRIPTION. Small or medium size species (length 4.5-6 mm), elongate, subcylindrical, moderately convex, shiny; glabrous, elytra sometimes finely pubescent. Ferruginous, usually epistome and pronotum disc darker. Head rather wide, narrowed frontward; epistome gibbous, simply punctured; clypeus sinuate at middle, rounded at sides, finely bordered, border glabrous; genae rounded, either ciliate or not, feebly more protruding than eyes; latter rather large; frontal suture impressed, not tuberculate. Pronotum punctured; hind angles truncate; lateral margins and base finely bordered. Scutellum subpentagonal, at base somewhat larger than first two elytral interstices. Elytra without humeral denticle, finely striate, striae feebly crenulate, first one somewhat wider than second apically; interstices flat, sparsely punctured. Fore tibiae distally tridentate and with some proximal denticles at outer margin, upper side densely punctured. Middle and hind tarsi longer than tibiae. Middle and hind tibiae with feeble transverse carinae on outer face, apically fimbriate with spinules elongate and irregularly unequal. Pygidium partially exposed, usually visible from above, pubescent, with more elongate and sparse setae on disc, denser at distal margin. Sexual dimorphism shown in males by fore tibiae sinuate at inner margin; first segment of hind tarsi sulcate on outer face and serrulate at each side of impression. Aedeagus with rather elongate paramera. Epipharynx sinuate at middle of front margin; epitorma conical; corypha with two elongate apical spiculae; chaetopariae dense; tormae short; pedia pubescent, mixed some stronger lateral chaetae.

DISTRIBUTION. Afrotropical region.

REMARKS. Several species pertaining to this genus were overlooked by Authors publishing monographic works on Afrotropical Aphodiinae. At present these taxa are wrongly arranged in the genus *Erytus* but no *Erytus* species is distributed in Afrotropical region.

We could not study the type of *Doaphius rufopolitus* Balthasar, lacking in author's collection, but one of us (Bordat) examined a Balthasar's collection specimen from Kenya ("b. Mombassa"). This female specimen compared with those of *Erytus gracilioides* Paulian, 1942, does not show any taxonomic difference. The synonymy between the two taxa might be established but it is not herein proposed because the specimen from Balthasar's collection has not identification label with author's handwriting and it was not collected in the same locality of the type ("Alessandra, italienish Somaliland"). Anyway, the diagnosis of *Doaphius*, based on the taxonomy of *Aphodius gracilioides*, is sufficient for correctly assigning a species-group taxon to this genus.

Doaphius rufopolitus Balthasar, 1941

Doaphius rufopolitus Balthasar, 1941b: 172

TYPE LOCALITY: "Italienish Somaliland, Alessandra" [Somalia].

TYPE DEPOSITORY: Balthasar collection (?), Národní Muzeum Prague (type probably lost)

Doaphius gracilioides (Paulian, 1942) **n. comb.** (figs 496, 511-513)

Erytus gracilioides Paulian, 1942: 72

TYPE LOCALITY: Voi, Afrique orientale [Kenya].

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (holotype female examined).

DESCRIPTION. Length 5-6 mm, elongate, subcylindrical, moderately convex, shiny, glabrous. Brown-reddish, epistome and pronotum disc darker. Head with epistome doubly punctured, smaller punctures throughout scattered, twice larger ones irregularly and sparsely distributed; clypeus distinctly sinuate at middle, widely rounded at sides, quite thinly bordered, border anteriorly upturned and not bristled; genae rounded, very shortly ciliate, feebly more protruding than eyes; frontal suture finely impressed, not tuberculate. Pronotum doubly punctured, smaller punctures like those of head, large punctures, three to five times larger than small punctures, rather densely and irregularly scattered around the disc only; lateral margins curved and thinly bordered; base slightly bisinuate and thinly bordered. Scutellum with few small basal punctures. Elytra finely striate; striae feebly crenulate, not joined each other apically, ninth one not joined to tenth before humeral callus; interstices flat, sparsely and finely punctured. Middle and hind tarsi longer than respective tibiae. Abdominal sternites punctured and pubescent. Hind tibiae superior apical spur shorter than first tarsal segment; latter as long as following three combined. Pygidium distinctly punctured and pubescent. Male: fore tibiae sinuate at inner margin and distinctly fringed at outer margin; their apical spur stouter, parallel-sided and apically rounded; first segment of hind tarsi outward sulcate and serrulate at each side of groove. Female: fore tibiae not sinuate at inner margin; their apical spur slender and apically acuminate; first segment of hind tibiae normally shaped.

DISTRIBUTION. Ethiopia (Harar, Shoa), Kenya (Voi) and (?) Somalia.

Genus *DREPANOCANTHOIDES* A. Schmidt, 1913

Aphodius (Drepanocanthoides) A. Schmidt, 1913: 139; M. Dellacasa, 1988a (1987): 238; G. Dellacasa & Gordon, 1994: 159

Drepanocanthoides; Stebnicka & Howden, 1995: 720

TYPE SPECIES: *Aphodius walshii* Horn, 1870 (subsequent designation: M. Dellacasa, 1988).

DESCRIPTION. Little or medium size species (length 3-6 mm), convex, head and pronotum shiny, elytra alutaceous, latter apically pubescent. Head and pronotum blackish, elytra brown-yellowish. Head with epistome moderately convex, sparsely finely punctured; clypeus feebly sinuate at middle, rounded at sides, quite distinctly bordered, border laterally bristled; genae obtuse, elongately ciliate, slightly more protruding than eyes; latter medium sized; frontal suture not tuberculate. Pronotum transverse, moderately convex, sparsely punctured; sides arcuate, elongately ciliate; hind angles rounded; base bisinuate, thinly bordered. Scutellum small, triangularly elongate. Elytra oval, convex, alutaceous, apically pubescent; striae moderately impressed, finely punctured, not crenulate; interstices convex, sparsely punctured. First segment of hind tarsi as long as superior apical spur of tibia and nearly as long as following three combined. Fore tibiae distally more or less strongly tridentate and proximally not serrulate at outer margin; upper side finely and sparsely punctured.

Middle and hind tibiae with rather feeble transverse carinae on outer face; apically fimbriate with spinules elongate and irregularly unequal. Pygidium sparsely and subrugosely punctured, punctures straightly and rather elongately setigerous; its apical margin densely and very elongately ciliate. Sexual dimorphism shown in males by first segment of fore tarsi with inner apical denticle; by nearly lacking of third tooth at outer margin of fore tibiae, their inner side angulately widened at second outer tooth level; by metafemora with a dentiform process at middle of posterior margin. Aedeagus stout, strongly sclerotized, with a rounded membranous process covering the curved apex of paramera. Epipharynx transverse, faintly sinuate at front margin; widely rounded at sides; epitorma elongate, moderately widened anteriorly; corypha protruding beyond front margin and with strong apical spiculae; pedia irregularly pubescent, with many short chaetae arranged in near regular rows; chaetopariae rather short and dense.

DISTRIBUTION. Nearctic and Australian (?) region.

REMARKS. Stebnicka & Howden (1995) designated type species of this genus *Aphodius neglectus* A. Schmidt, 1912 and moreover they stated that the Nearctic *Aphodius walshii* Horn, 1870 is not closely related to Australian taxa pertaining to *Drepanocanthoides*.

Conversely *Aphodius walshii* was already designated as type species of said genus by M. Dellacasa (1988). Moreover the features of aedeagus and epipharynx of Australian species do not fit those of the generic diagnosis as herein established.

Drepanocanthoides walshii (Horn, 1870) **n. comb.** (figs 497, 514-516)

Aphodius walshii Horn, 1870: 132

Aphodius (Drepanocanthoides) walshii; A. Schmidt, 1913: 139; M. Dellacasa, 1988a (1987): 216; G. Dellacasa & Gordon, 1994: 160

TYPE LOCALITY: Illinois [U.S.A.].

TYPE DEPOSITORY: Museum of Comparative Zoology. Harvard University. Cambridge, MA (U.S.A.) (type not examined).

DESCRIPTION. Length 5-6 mm, moderately elongate, convex, head and pronotum shiny, elytra alutaceous, posteriorly distinctly pubescent. Head and pronotum piceous, latter with broadly yellowish sides; elytra brownish, base and sides dull yellow; antennae testaceous with blackish club; legs yellowish. Head shiny, epistome moderately convex, very sparsely and finely punctured; clypeus broadly feebly sinuate at middle, rounded at sides, completely distinctly bordered, border slightly upturned; genae obtuse, elongately ciliate, feebly more protruding than eyes; frontal suture nearly faint, not at all tuberculate. Pronotum shiny, transverse, moderately convex, finely and sparsely punctured, with few coarse punctures near sides only; latter moderately arcuate, distinctly bordered, elongately ciliate; hind angles obtusely rounded; base bisinuate, quite thinly bordered. Scutellum elongate, flat, finely and sparsely punctured near base. Elytra oval, convex, alutaceous, apically nearly dull and with enough elongate, sparse, yellowish hairs; epipleura elongately bristled; striae moderately deep, very finely and superficially punctured, not crenulate; interstices convex, finely and sparsely punctured, outer ones more distinctly punctured. First segment of hind tarsi as long as superior apical spur of tibiae and nearly as long as following three combined. Male: fore tibiae

with two distinct teeth at outer margin, the third nearly obsolete, distinctly broadened and sinuate at inner side, their apical spur stout, hooked at tip; first segment of fore tarsi inferiorly denticulate; metasternal plate deeply sulcate; hind femora with more or less strong dentiform process at middle of posterior margin. Female: fore tibiae and tarsi normally shaped; metasternal plate feebly sulcate; hind femora without tooth.

DISTRIBUTION. U.S.A. (Illinois, Kansas, North and South Dakota, Nebraska) and Canada (Alberta).

Genus *EMADIELLUS* A. Schmidt, 1913

Aphodius (*Emadiellus*) A. Schmidt, 1913: 138; Balthasar, 1964: 179; M. Dellacasa, 1988a (1987): 124

Emadiellus; Paulian, 1942: 74

Aphodius (*Biraloides*) Balthasar, 1945: 41; Balthasar, 1964: 179 (as synonym of *Emadiellus*)

Aphodius (*Aphodius* Artengruppe *Emadiellus*); Endrödi, 1960b: 186

Aphodius (Artengruppe *Emadiellus*); Endrödi, 1964a: 238

Aphodius (group *Emadiellus*); Endrödi & Rakovič, 1981: 50

TYPE SPECIES: *Aphodius rufopustulatus* Wiedemann, 1823 (subsequent designation: Paulian, 1942).

DESCRIPTION. Small or medium size species (length 4.5-6.5 mm) oval, moderately convex, subshiny, glabrous. Blackish or piceous; clypeal margin and pronotum sides paler; elytra with more or less widened humeral and subapical rounded reddish spots, sometimes joined each other, rarely quite lacking. Head narrowed frontward; epistome gibbous, rather densely punctured; clypeus faintly sinuate at middle, rounded at sides, thinly bordered, border very shortly bristled; genae small, rounded, shortly ciliate, feebly more protruding than eyes; latter medium sized; frontal suture finely impressed, not at all tuberculate. Pronotum strongly transverse, regularly rather densely punctured; base not bordered. Scutellum small, triangular, with curved sides. Elytra widely oval, with small denticle at shoulder, distinctly punctato-striate; first stria as wide as others apically; interstices microreticulate, finely punctured. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side coarsely and irregularly punctured. Middle and hind tibiae with rather strong transverse carinae at outer face; apically fimbriate with spinules elongate and irregularly unequal. Hind tibiae superior apical spur shorter than first tarsal segment. Pygidium with sparse straight setae on disc and apically. Sexual dimorphism nearly faint: metasternal plate, in males, relatively more distinctly grooved and less densely punctured. Aedeagus with paramera short, curved and acuminate apically. Epipharynx transverse; anterior margin not sinuate at middle; epitorma narrow, not reaching the front margin; corypha with two elongate apical spiculae; pedia shortly pubescent with some stouter chaeta mixed.

DISTRIBUTION. Oriental and Afrotropical (?) region.

REMARKS. The synonymy of genus-group *Biraloides* Balthasar, 1945 versus *Emadiellus* A. Schmidt, 1913 was proposed by Balthasar himself (1964) and, in the same paper, the type species of the former, i. e.: *Aphodius pistor* Balthasar, 1945, was downgraded to subspecies of *rufopustulatus* Wiedemann, 1823.

Emadiellus rufopustulatus (Wiedemann, 1823) (figs 507, 517-519)

Aphodius rufopustulatus Wiedemann, 1823: 27

Aphodius (Emadiellus) rufopustulatus; A. Schmidt, 1913: 138; Balthasar, 1964: 179

Emadiellus rufopustulatus; Paulian, 1942: 74

TYPE LOCALITY: Bengalia [India].

TYPE DEPOSITORY: Zoologisk Museum, Universitets København. Copenhagen (type not examined).

DESCRIPTION. Length 5-6 mm, oval, moderately convex, feebly shiny, glabrous. Brown-blackish; clypeus, sides of pronotum, shoulder and elytral preapical spot reddish; sometimes elytra quite blackish. Head with epistome feebly gibbous, regularly finely and rather densely punctured; clypeus truncate or faintly sinuate at middle, rounded at sides, thinly bordered, border quite shortly bristled; genae rounded, shortly bristled, more protruding than eyes; frontal suture finely impressed, not at all tuberculate. Pronotum doubly punctured; smaller punctures like those of head, large punctures, twice or three times larger than small punctures, more dense around disc and toward base; lateral margins as well as hind angles thinly bordered; latter rounded; base feebly bisinuate, not bordered. Scutellum microreticulate, with few punctures on basal half. Elytra rather finely striate; striae subcrenulate; interstices feebly convex, finely densely punctured. Fore tibiae apical spur regularly acuminate toward apex and rather rounded apically. Hind tibiae superior apical spur distinctly shorter than first tarsal segment; latter as long as following three combined. Male: metasternal plate distinctly grooved and relatively less densely punctured. Female: metasternal plate nearly flat and more sparsely punctured.

DISTRIBUTION. Cambodia, India, Laos, Thailand, Vietnam.

Genus *ERYTODES* A. Schmidt, 1916 **stat. nov.**

Aphodius (Erytodes) A. Schmidt, 1916: 115; Balthasar, 1964: 92 (as synonym of *Erytus*); M. Dellacasa, 1988a (1987): 230

TYPE SPECIES: *Aphodius confirmatus* A. Schmidt, 1913 (monotypy).

DESCRIPTION. Rather small species (length 5.5 mm), moderately elongate, strongly convex, shiny, glabrous. Dark brown-reddish. Head with epistome gibbous, doubly punctured and with two oblique carinae frontward extended from centre to clypeal lateral angles; clypeus widely and feebly sinuate at middle, obtusely subdenticulate at each side, very thinly bordered, border anteriorly upturned and shortly bristled; genae obtuse, ciliate, feebly more protruding than eyes; latter rather large; frontal suture not tuberculate. Pronotum doubly punctured; lateral margins feebly curved and finely bordered; hind angles obtusely rounded; base bordered. Scutellum small, elongately triangular, lateral margins curved. Elytra oval, not denticulate at shoulder, punctato-striate; lateral striae apically joined each other; interstices moderately convex, sparsely and finely punctured. Fore tibiae distally tridentate and proximally strongly serrulate at outer margin; upper side smooth; their inferior carina with an acute denticle at basal third level. Middle and hind tibiae normally widened toward apex and with two strong

oblique carinae on outer face; apically fimbriate with spinules irregularly unequal and rather elongate. Fore and middle tarsi somewhat longer than respective tibiae. Abdominal sternites punctured and pubescent. Pygidium with elongate setae at apical margin. Epipharynx transverse; bisinuate at anterior margin; epitorma drop-shaped; corypha with five (or six?) apical spines; chaetopariae rather elongate; pedia quite pubescent, mixed some sparse much stronger chaetae. Males unknown.

DISTRIBUTION. Oriental region (India).

REMARKS. As far as we know, the holotype female of *Aphodius confirmatus* A. Schmidt, 1916 is the unique specimen known, nevertheless Balthasar (1964: 98) seems to have had the possibility to study several other specimens of both sexes as mentioned in his redescription of the taxon. He concluded that *Erytodes* has to be considered junior synonym of *Erytus* but no specimen of *Erytodes confirmatus* was traced in his collection.

We cannot accept Balthasar's conclusions because habitus and epipharynx features of *Erytodes confirmatus*, of which we had the opportunity to study the holotype, are strongly different from those of *Erytus* taxa.

Erytodes confirmatus (A. Schmidt, 1916) **n. comb.** (figs 508, 520)

Aphodius (*Erytodes*) *confirmatus* A. Schmidt, 1916: 115; M. Dellacasa, 1988a (1987): 112

Aphodius (*Erytus*) *confirmatus*; Balthasar, 1964: 98

TYPE LOCALITY: N. Corg, Madras Pres. [India].

TYPE DEPOSITORY: Naturhistoriska Riksmuseet. Stockholm (holotype female examined).

DESCRIPTION. Length 5.5 mm, elongate-oval, strongly convex, shiny, glabrous. Dark brown-reddish; clypeal margin, pronotum sides and base, scutellum and elytral base paler. Head with epistome gibbous, feebly and obliquely carinate; finely punctured, punctures nearly regularly scattered throughout, more superficial on epistomal centre only; clypeus widely feebly sinuate at middle; subdenticulate at each side; genae obtusely rounded, shortly ciliate, feebly more protruding than eyes; frontal suture finely impressed, not tuberculate. Pronotum slightly narrowed frontward, doubly and nearly regularly punctured; smaller, scattered throughout, punctures like those of the head; large punctures, four or five times larger than small, more sparse mainly on disc; hind angles obtusely rounded; base feebly bisinuate, distinctly bordered. Scutellum convex, basally somewhat larger than two first elytral interstices, curved at sides, with few punctures on basal half. Elytra slightly widened posteriorly, finely striate; striae larger on preapical declivity, distinctly crenulate on disc; interstices sparsely and finely punctured, feebly convex on disc, more strongly convex apically, eighth one shortened before apex. Pygidium densely pubescent on disc. Fore tibiae apical spur elongate and regularly acuminate apically. Hind tibiae superior apical spur slightly longer than first segment of tarsi; latter shorter than following two combined. Male unknown.

DISTRIBUTION. The species is known, as far as we know, from type locality only.

Genus *ERYTUS* Mulsant & Rey, 1870*Aphodius* (*Anomius* section *Erytus*) Mulsant & Rey, 1870b (1869): 506*Aphodius* (*Eryptus*); Mulsant & Rey, 1871 (1870): 474 (incorrect spelling)*Aphodius* (*Erytus*); Reitter, 1892: 190; Balthasar, 1964: 92, G. Dellacasa, 1983: 248*Erytus*; Paulian, 1942: 71*Aphodius* (*Aphodius* Artengruppe *Erytus*); Endrödi, 1960b: 98*Aphodius* (Artengruppe *Erytus*); Endrödi, 1964a: 261*Aphodius* (group *Erytus*); Endrödi & Rakovič, 1981: 51

TYPE SPECIES: *Aphodius brunneus* Klug, 1845 (nec *Aphodius brunneus* Thunberg, 1818, valid name *Aphodius cognatus* Fairmaire, 1860) (subsequent designation: Reitter, 1892)

DESCRIPTION. Medium size species (length 5-8 mm), strongly elongate, subcylindrical, either shiny or dull, glabrous or more or less widely pubescent. Quite pale testaceous or ferrugineous. Head with epistome feebly gibbous, punctured; clypeus anteriorly truncate or sinuate at middle, rounded at sides, quite thinly bordered, border shortly bristled; genae rounded, ciliate, slightly or not more protruding than eyes; latter rather large; frontal suture distinct, not tuberculate, sometimes faintly gibbous. Pronotum transverse, feebly convex, punctured; sides and base bordered; latter sometimes very thinly bordered. Scutellum small, pentagonal with sides parallel toward base. Elytra strongly elongate; parallel-sided; striae usually fine, superficial, rarely deep; interstices flat, generally shiny, rarely dull, smooth or more or less distinctly and densely punctured, sometimes shortly and more or less widely pubescent backward. Tibiae and tarsi slender, latter nearly always longer than tibiae. Fore tibiae distally tridentate and proximally serrulate at outer margin, upper side smooth. Middle and hind tibiae with feeble transverse carinae on outer face; apically fimbriate with spinules rather short but irregularly unequal. Pygidium with rather dense, short and recumbent pubescence, mixed few straight setae; its apical margin densely and elongately ciliate. Sexual dimorphism shown in males by fore tibiae apical spur basally plumped, flattened and sometimes apically hooked. Aedeagus feebly sclerotized; paramera short, rounded and often membranously auriculate apically. Epipharynx more or less distinctly sinuate at front margin; epitorma drop-shaped; corypha with stout and strongly elongate protruding spiculae, central ones much more elongate than contiguous; pedia densely pubescent; chaetopariae usually short and dense.

DISTRIBUTION. Southern Palearctic region.

Erytus cognatus (Fairmaire, 1860) **n. comb.** (figs 509, 521-523)*Aphodius brunneus* Klug in Ehrenberg, 1845: n. 6 (nec *Aphodius brunneus* Thunberg, 1818)*Aphodius cognatus* Fairmaire in Fairmaire & Coquerel, 1860: 172*Aphodius* (*Anomius* section *Erytus*) *brunneus*; Mulsant & Rey, 1870b (1869): 513*Aphodius* (*Erytus*) *brunneus*; Reitter, 1892: 191*Aphodius* (*Erytus*) *klugi* A. Schmidt in Schenkling, 1910: 93 (*nomen novum* for *Aphodius brunneus* Klug, 1845)*Aphodius* (*Erytus*) *cognatus*; Baraud, 1987: 354 (lectotype designation).

TYPE LOCALITY: Tanger [Morocco].

TYPE DEPOSITORY: Muséum national d'Histoire naturelle, Paris (lectotype not examined)

DESCRIPTION. Length 5-6 mm, elongate, moderately convex, subcylindrical, strongly shiny, nearly glabrous. Quite brownish-red. Head with epistome feebly convex, widely flattened distally, finely sparsely punctured; clypeus obtusely sinuate at middle, rounded at sides; genae rounded, not more protruding than eyes; frontal suture feebly impressed. Pronotum nearly parallel-sided, on disc very finely and superficially punctured, punctures somewhat denser and coarser on sides; fore angles widely rounded; hind angles obtusely rounded; sides thinly bordered and distinctly ciliate; base thinly bordered. Scutellum superficially and sparsely punctured. Elytra strongly elongate, parallel-sided; striae fine, distinctly punctured, faintly crenulate, first one apically almost joined to suture; interstices flat, strongly shiny, finely but distinctly punctured, with extremely short sparse hairs apically. Hind tibiae superior apical spur shorter than first tarsal segment; latter shorter than following two combined. Male: fore tibiae apical spur basally plump, flattened, hooked apically. Female: fore tibiae apical spur slender and acuminate apically.

DISTRIBUTION. Southern Palearctic region.

Genus *ESYMUS* Mulsant & Rey, 1870

Aphodius (*Bodilus* groupe *Esymus*) Mulsant & Rey, 1870b (1869): 519

Aphodius (*Aphodius* division *Orodalus*) Mulsant & Rey, 1870b (1869): 439

Aphodius (*Orodalus*); Mulsant & Rey, 1871 (1870): 474; G. Dellacasa, 1983: 261 (as synonym of *Esymus*)

Aphodius (*Esimus*) [sic!] Reitter, 1892. 206 (incorrect spelling)

Aphodius (*Esymus*); Balthasar, 1964: 332; G. Dellacasa, 1983: 253

Esymus; Paulian, 1942: 81; Ádám, 1994: 14 (as synonym of *Phalacrothorus*)

Aphodius (Artengruppe *Esymus*); Endrödi, 1964a: 271

TYPE SPECIES: *Scarabaeus merdarius* Fabricius, 1775 (subsequent designation: Reitter, 1892).

DESCRIPTION. Small size species (length 3-5 mm), oval-elongate, convex, moderately shiny, glabrous. Blackish or brownish, sometimes either elytra reddish spotted or quite yellowish or reddish with blackish suture. Head with epistome moderately convex, punctured; clypeus sinuate at middle rounded at sides, quite thinly bordered, border shortly bristled; genae small, ciliate, feebly or not at all more protruding than eyes; latter medium sized; frontal suture not tuberculate, sometimes faint. Pronotum transverse, convex, punctured; hind angles rounded; base bordered. Scutellum small, pentagonal, with sides parallel toward base; finely punctured. Elytra oval, convex; striae wide, superficially punctured, more or less distinctly crenulate; interstices convex or nearly flat, usually sparsely and finely punctured. First segment of hind tarsi elongate, often as long as following two combined. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth and their apical spur simple in both sexes. Middle and hind tibiae with strong transverse carina on outer face; apically fimbriate with spinules rather stout, moderately elongate and irregularly unequal. Pygidium elongately ciliate at apical margin. Sexual dimorphism shown in males by less dense punctation on pronotal disc and more concave metasternal plate. Aedeagus with elongate tegmen; paramera short, covered distally by dorsal membrane; apex curved

toward ventral side so that they appear, in lateral view, obliquely truncate. Epipharynx feebly sinuate at front margin, rounded at sides; epitorma shortly drop-shaped; corypha with moderately stout and elongate apical spiculae; pedia with dense prophobae, mixed many stout short chaetae; chaetopariae elongate, slender, densely arranged; apophobae faint; apotormae slender and elongate.

DISTRIBUTION. Palearctic region.

Esymus merdarius (Fabricius, 1775) (figs 510, 528-530)

Scarabaeus merdarius Fabricius, 1775: 19

Aphodius merdarius; Erichson, 1848: 869

Aphodius (*Esymus*) *merdarius*; Reitter, 1892: 207; Landin, 1956a: 219 (lectotype designation)

Esymus merdarius; Paulian, 1942: 81

Phalacronothus merdarius; Ádám, 1994: 14

TYPE LOCALITY: "Europa".

TYPE DEPOSITORY: Zoological Museum, Kiel (lectotype not examined).

DESCRIPTION. Length 4-5 mm, oval elongate, feebly convex, moderately shiny, glabrous. Head and pronotum blackish; latter with fore angles testaceous; elytra orange with sutural margin and shoulder blackish, rarely epipleura blackish also; sometimes pronotum quite blackish or with complete lateral margin yellowish. Head with epistome feebly gibbous, finely punctured; clypeus anteriorly nearly truncate, rounded at sides; genae obtusely rounded, faintly more protruding than eyes; frontal suture nearly obsolete, not tuberculate. Pronotum transverse, moderately convex, doubly and more or less coarsely punctured; hind angles obtusely rounded; base thinly bordered. Scutellum narrow, elongate, apically acuminate, sparsely and irregularly punctured, raised apically. Elytra elongate, moderately shiny, feebly widened backward; striae wide, moderately deep, distinctly crenulate; interstices feebly convex, finely and sparsely punctured. Hind tibiae superior apical spur as long as first tarsal segment; latter as long as following three combined. Male: pronotum relatively more superficially and finely punctured on disc, not narrowed frontward; metasternal plate strongly concave. Female: pronotum relatively more coarsely and densely punctured on disc, narrowed frontward; metasternal plate feebly longitudinally impressed.

DISTRIBUTION. Palearctic region.

Genus *EUDOLUS* Mulsant & Rey, 1870

Aphodius (*Eudolus* section *Eudolus*) Mulsant & Rey, 1870b (1869): 467

Aphodius (*Eudolus*) Mulsant & Rey, 1871 (1870): 474; Reitter, 1892: 210 (as synonym of *Orodalus*); d'Orbigny, 1896a: 211 (as synonym of *Calamosternus*); G. Dellacasa, 1983: 258

Eudolus; Ádám, 1994: 14 (as synonym of *Phalacronothus*)

TYPE SPECIES: *Scarabaeus quadriguttatus* Herbst, 1763 (monotypy).

DESCRIPTION. Small size species (length 3-5 mm), oval-elongate, feebly convex, shiny, glabrous. Blackish; fore angle of pronotum and more or less wide elytral spots bright orange. Head with epistome nearly flat, punctured; clypeus sinuate at middle, rounded

at sides, thinly bordered, border glabrous; genae obtuse, ciliate, more protruding than eyes; latter medium sized; frontal suture distinctly impressed, not tuberculate. Pronotum convex, punctured, bordered at base. Scutellum small, triangular, longitudinally depressed. Elytra elongate; striae fine and superficial; interstices flat or feebly convex, sparsely punctured. Fore tibiae distally tridentate and proximally feebly serrulate at outer margin; upper side faintly punctured. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules elongate and irregularly unequal. First segment of hind tarsi as long as superior apical spur of tibiae as well as following two combined. Sexual dimorphism shown in males mostly by hooked fore tibiae apical spur. Pygidium with dense, moderately elongate, recumbent pubescence, mixed few, very elongate and straight discal setae; its apical margin sparsely and very elongately ciliate. Aedeagus with elongate and straight paramera, apically acuminate and with a strongly wide, characteristic wing-shaped membrane. Epipharynx feebly sinuate at front margin, feebly rounded at sides; epitorma chalice-shaped; corypha with short apical spiculae; pedia with short dense prophobae, mixed short chaetae serially arranged; chaetopariae stout, short and dense; apophobae distinct; apotormae slender and more or less faint.

DISTRIBUTION. Palearctic region.

Eudolus quadriguttatus (Herbst, 1783) **n. comb.** (figs 524, 531-533)

Scarabaeus quadriguttatus Herbst, 1783: 10

Aphodius quadriguttatus; Erichson, 1848: 863

Aphodius (Eudolus) quadriguttatus; Mulsant & Rey, 1871 (1870): 474; G. Dellacasa, 1983: 258

Aphodius (Orodalus) quadriguttatus; Reitter, 1892: 212

Aphodius (Emadus) quadriguttatus; A. Schmidt, 1913: 140

Phalacrothous quadriguttatus; Ádám, 1994: 14

TYPE LOCALITY: Reppen [Germany].

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 3-5 mm, oval-elongate, moderately convex, shiny, glabrous. Head blackish, faintly reddish distally; pronotum black with reddish lateral margin widened at front angles; elytra blackish, narrowly bright orange apically and with two round wide spots of same colour; sometimes pronotum fore angles reddish only; or elytral orange spots widened and sutural interstice and a narrow transversal bind blackish, simulating a cross figure; or, at least, elytra quite orange, sutural interstice and lateral margin blackish only. Head with epistome feebly gibbous, almost regularly punctured; clypeus feebly sinuate at middle, rounded at sides; genae obtusely angulate, feebly more protruding than eyes; frontal suture distinct, not tuberculate. Pronotum shiny, moderately convex, doubly punctured, small dense punctures mixed with few, feebly umbilicate and larger ones; hind angles obtuse; sides and base thinly bordered. Scutellum elongate, microreticulate, punctured basally, smooth and subcarinate apically. Elytra elongate, oval, moderately shiny; striae fine, superficial, crenulate; interstices flat, microreticulate, finely sparsely punctured. Hind tibiae superior apical spur

somewhat shorter than first tarsal segment; latter as long as following two combined. Male: fore tibiae apical spur stout, subcylindrical, hooked apically; pronotum relatively more transverse and shiny, more superficially and sparsely punctured on disc; metasternal plate strongly concave. Female: fore tibiae apical spur slender, apically acuminate; pronotum narrowed frontward, relatively less shiny and more coarsely, densely punctured on disc; metasternal plate nearly flat.

DISTRIBUTION. Palearctic region.

Genus *EUHEPTAULACUS* G. Dellacasa, 1983

Euheptaulacus G. Dellacasa, 1983: 419

TYPE SPECIES: *Aphodius carinatus* Germar, 1824 (original designation).

- DESCRIPTION. Rather small species (length 3.5-6 mm), moderately convex, feebly shiny, pubescent. Brown-yellowish; elytra usually blackish spotted. Head with epistome either gibbous or nearly flat, punctured, punctures piligerous; clypeus anteriorly truncate or feebly sinuate at middle, rounded at sides, quite and rather thickly bordered, border shortly bristled; genae obtusely angulate, elongately ciliate, more protruding than eyes; latter medium sized; frontal suture distinct, not tuberculate. Pronotum moderately convex, punctured, punctures piligerous; sides distinctly elongately ciliate, bordered; hind angles obtusely truncate or rounded; base shortly bristled, not at all bordered or border widely interrupted at middle. Scutellum small, triangularly elongate. Elytra with less than ten striae, elongate; epipleura quite distinctly ciliate; interstices costiform, more or less raised and more or less diffusedly pubescent; striae groove-shaped, with one or two longitudinal rows of coarse punctures. Segments of hind tarsi slender and elongate. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side faintly punctured. Middle and hind tibiae with rather strong transverse carinae on outer face, apically fimbriate with spinules elongate and alternately unequal. Pygidium with few elongate cilia at apical margin. Sexual dimorphism shown in males mostly by fore tibiae apical spur hooked apically and by pronotum not narrowed frontward. Aedeagus with slender and elongate paramera, apically acuminate. Epipharynx widely rounded at sides; epitorma subcylindrical; corypha with elongate apical spiculae; chaetopodia with fine dense prophobae, mixed several stout chaetae arranged in nearly regular oblique belts; chaetopariae dense and moderately elongate.

DISTRIBUTION. Palearctic region.

Euheptaulacus carinatus (Germar, 1824) (figs 525, 534-536)

Aphodius carinatus Germar, 1824: 111

Heptaulacus carinatus; Erichson, 1848: 902

Euheptaulacus carinatus; G. Dellacasa, 1983: 422

TYPE LOCALITY: "prope Barnaul in Sibiria" [Russia].

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 4-6 mm, elongate, moderately convex, feebly shiny, pubescent. Head and pronotum blackish, with sides more or less widely reddish; elytra dirty yellowish with

sutural margin and many subquadrate spots blackish. Head with epistome nearly flat, densely coarsely punctured, punctures setigerous; clypeus subtruncate at middle, rounded at sides; genae angulately truncate, elongately ciliate, much more protruding than eyes; frontal suture distinctly impressed. Pronotum moderately convex, densely and coarsely punctured, punctures setigerous and denser on sides, here mixed few smaller ones; sides bordered, elongately ciliate; hind angles obliquely truncate; base bisinuate, rather shortly bristled, not bordered. Scutellum barely concave, sparsely punctured, microreticulate and dull basally, smooth and shiny apically. Elytra elongate, moderately convex, slightly broadened backward; subcostiform interstices on disc as wide as groove-shaped striae, not strongly shiny, with lateral rows of setigerous punctures, setae backward obliquely recumbent; striae wide, feebly sunk, strongly dull, sparsely, irregularly and coarsely punctured. First segment of hind tarsi nearly as long as superior apical spur of tibiae and longer than following two combined. Male: fore tibiae apical spur hooked apically; pronotum transverse, relatively less convex and more sparsely and superficially punctured. Female: fore tibiae apical spur regularly acuminate apically; pronotum relatively more convex, narrowed frontward, more densely and coarsely punctured.

DISTRIBUTION. Palearctic region.

Genus *EUORODALUS* G. Dellacasa, 1983 **stat. nov.**

Aphodius (*Euorodalus*) G. Dellacasa, 1983: 260

TYPE SPECIES: *Scarabaeus coenosus* Panzer, 1798 (original designation).

DESCRIPTION. Small size species (length 4-5 mm), oval-elongate, shiny or dull, convex, usually glabrous. Blackish; sometimes with reddish spotted elytra or with elytra either quite reddish or pale yellow with blackish suture. Head with epistome gibbous, punctured; clypeus sinuate at middle, rounded at sides, quite thinly bordered, border faintly bristled laterally; genae rounded, sparsely and elongately ciliate, more protruding than eyes; latter medium sized; frontal suture not or barely tuberculate. Pronotum distinctly punctured, punctation coarser on sides; base bordered. Scutellum small, subpentagonal. Elytra convex, striae rather strong, crenulate; interstices flat or moderately convex. Fore tibiae distally tridentate and proximally faintly serrulate at outer margin; upper side sparsely and coarsely punctured. Middle tibiae with strong transverse carinae on outer face in both sexes. Middle and hind tibiae apically fimbriate with spinules elongate and irregularly unequal. Pygidium with sparse, moderately elongate, recumbent pubescence; its apical margin sparsely and rather elongately ciliate. Sexual dimorphism shown in males by hind tibiae compressed and strongly widened apically and relatively with more feeble transverse carinae on outer face, by segments of hind tarsi stout and plumped. Aedeagus stout with short paramera usually membranous at apex and strongly curved toward ventral margin so that in lateral view simulating an acute angle. Epipharynx widely rounded at sides; distinctly sinuate at front margin; epitorma chalice-shaped; corypha with protruding elongate apical spiculae; pedia densely pubescent with mixed several short stout chaetae serially arranged; chaetopariae dense and moderately elongate.

DISTRIBUTION. Palearctic region.

Euorodalus coenosus (Panzer, 1798) **n. comb.** (figs 526, 541-543)*Scarabaeus coenosus* Panzer, 1798: n.7*Scarabaeus tristis* Zenker in Panzer, 1801: n.1*Aphodius coenosus*; Erichson, 1848: 860*Aphodius (Orodalus) tristis*; Reitter, 1892: 211*Aphodius (Orodalus) coenosus*; Paulian, 1941: 125*Aphodius (Euorodalus) coenosus*; G. Dellacasa, 1983: 263

TYPE LOCALITY: "Silesiae" [Poland].

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 4-5 mm, oval-elongate, strongly convex, head and pronotum moderately shiny, elytra nearly dull, glabrous. Blackish, pronotum sides widely reddish, elytra quite red; sometimes quite blackish or reddish; or with elytra dark brown, shadely reddish toward apex, with or without reddish humeral and preapical spots. Head with epistome gibbous, densely and rather coarsely punctured; clypeus sinuate at middle, rounded at sides; genae rounded, more protruding than eyes; frontal suture distinct, not tuberculate, somewhat raised laterally. Pronotum strongly convex, doubly, densely and subregularly punctured, punctation coarser on sides; latter nearly straight, bordered; hind angles obtuse; base distinctly bordered. Scutellum rather wide, sparsely punctured basally, longitudinally distinctly carinate apically. Elytra convex; striae deep, feebly crenulate; interstices nearly flat, rather dull, usually strongly microreticulate and distinctly punctured, punctation coarser apically. Hind tibiae with superior apical spur stout and more or less strongly turned outward. Hind tibiae superior apical spur longer than first tarsal segment; latter shorter than following two combined. Male: fore tibiae apical spur wide, stout, apically downward bent; hind tibiae compressed, wide, on outer face with distinct but feeble carinae; first segment of hind tarsi strongly plumped. Female: fore tibiae apical spur slender and acuminate apically; hind tibiae regularly shaped; first segment of hind tarsi relatively less plumped.

DISTRIBUTION. Middle and Northern Europe

Genus *EUPLEURUS* Mulsant, 1842*Eupleurus* Mulsant, 1842: 170; Ádám, 1994: 13*Coprimorphus* (groupe *Eupleurus*); Mulsant & Rey, 1870a (1869): 395*Aphodius (Eupleurus)*; d'Orbigny, 1896a: 202 (as synonym of *Colobopterus*); G. Dellacasa, 1983: 266TYPE SPECIES: *Scarabaeus subterraneus* Linné, 1758 (monotypy).

DESCRIPTION. Medium size species (length 5-8 mm), elongate, parallel, strongly convex, longitudinally flattened, quite shiny or with dull elytra, glabrous. Black; rarely elytra either more or less widely brown-reddish or quite red. Head with epistome gibbous, irregularly punctured; clypeus feebly sinuate at middle rounded at sides, entirely thickly bordered, border glabrous and slightly upturned; genae rounded, shortly ciliate, more protruding than eyes; latter medium sized; frontal suture trituberculate. Pronotum strongly convex, feebly flattened on disc; hind angles truncate; basal border rather thin and crenulate. Scutellum large, triangularly elongate, sunk. Elytra strongly convex,

subparallel-sided, narrowed backward, flattened on disc; striae formed by three substriae, one median, sunk, marked by transverse grooves, and two lateral thin, distinctly raised; interstices either convex or carinate, more or less distinctly punctured. Fore tibiae distally tridentate and proximally not serrulate at outer margin; upper side faintly punctured. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with short and equal spinules. Pygidium with fine, rather short and sparse pubescence; its apical margin densely and rather elongately ciliate. Sexual dimorphism shown in males by pronotum with a feeble impression at middle of front margin and by frontal suture with relatively stronger median tubercle. Aedeagus with elongate paramera without apical membrane. Epipharynx bisinuate at front margin; epitorma conical; corypha distinctly protruding and with several strong apical spiculae, two central ones strongly elongate; chaetopodia with rather sparse and short prophobae, mixed elongate and unequal chaetae; chaetopariae moderately dense and elongate.

DISTRIBUTION. Holarctic region.

Eupleurus subterraneus (Linné, 1758) (figs 527, 544-546)

Scarabaeus subterraneus Linné, 1758: 348

Scarabaeus sulcatus Fabricius, 1792: 24 (nec *Scarabaeus sulcatus* Drury, 1770)

Eupleurus subterraneus; Mulsant, 1842: 170; Ádám, 1994: 13

Aphodius subterraneus; Erichson, 1847b: 797

Coprimorphus subterraneus; Mulsant & Rey, 1870b (1869): 473

Aphodius (Colobopterus) subterraneus; Reitter, 1892: 178; Landin, 1956b: 7 (type location)

Aphodius sulcatus; Landin, 1956a: 210 (as synonym of *subterraneus*)

Aphodius (Eupleurus) subterraneus; G. Dellacasa, 1983: 267

TYPE LOCALITY: "Europa".

TYPE DEPOSITORY: Linnean Society collection. London (type not examined).

DESCRIPTION. Length 5-8 mm, elongate, parallel, longitudinally flattened, shiny, glabrous. Black, elytra sometimes with blue metallic shine or elytra more or less bright red. Head with epistome moderately gibbous, with curve transverse carina, anteriorly subrugosely punctured, punctation more shallow on disc; clypeus distinctly sinuate at middle, rounded at sides; genae obtusely rounded, distinctly more protruding than eyes, frontal suture trituberculate. Pronotum transverse, strongly convex, feebly flattened on disc, with double punctation, larger punctures irregularly and sparsely scattered, lacking anteriorly, mixed with numerous, nearly imperceptible ones; sides ciliate and sinuate before hind angles; base rather thickly bordered, border distinctly crenulate. Scutellum dull, elongate, sunk, coarsely and irregularly punctured; subcarinate and acuminate apically. Elytra nearly parallel-sided, abruptly narrowed towards apex, distinctly flattened on disc; striae broad, strongly deep, with wide and transverse punctures on the ground and with upturned margins simulating a sort of lateral substria, not crenulate; interstices convex, smooth, barely larger than striae. Hind tibiae superior apical spur shorter than first tarsal segment; latter longer than following two combined. Male: epistomal carina very strong; median tubercle of frontal suture corniculate; pronotum with feebly impression at middle of front margin. Female: epistomal carina almost faint;

tubercles of frontal suture transverse and nearly of equal size; pronotum without impression at front margin.

DISTRIBUTION. Europe, Northern and South-western Asia, Northern Africa, Canada, North-eastern U.S.A.

REMARKS. On the basis of Fabrician type material, Landin (1956a: 210-212) established the synonymy of *Aphodius sulcatus* (Fabricius, 1792) versus *Aphodius subterraneus* (Linné, 1758).

We think that it is enough important to remark that the name *Scarabaeus sulcatus* Fabricius, 1792 is anyway invalid because primary homonym of *Scarabaeus sulcatus* Drury, 1770 (nunc *Sulcophaneus sulcatus*).

Genus *EXAPHODIUS* Endrödi, 1960

Exaphodius Endrödi, 1960a: 352

TYPE SPECIES: *Exaphodius excellens* Endrödi, 1960 (original designation).

DESCRIPTION. Large species (length 16-18 mm), stout, convex, sericeous; glabrous, elytra preapically very shortly pubescent. Quite pale brownish. Head rather wide; epistome gibbous, doubly punctured; clypeus faintly sinuate at middle, widely rounded at sides, quite bordered, border densely bristled; genae obtusely rounded, shortly ciliate, more protruding than eyes; latter rather large; frontal suture finely impressed, not tuberculate. Pronotum distinctly transverse; doubly punctured; anterior margin finely bordered; lateral margins nearly straight, thickly bordered; front angles foveolate; hind angles rounded; basal margin feebly bisinuate, distinctly bordered and densely shortly bristled at middle only. Scutellum small, triangular, with curved sides. Elytra posteriorly callose, faintly depressed on disc, not denticulate at shoulder; humeral callus distinctly gibbous; striae fine and feebly impressed; interstices slightly convex, densely and finely punctured. Fore tibiae distally tridentate and with a fourth, very small tooth but proximally not serrulate at outer margin; upper side with several large punctures irregularly scattered. Middle and hind tibiae normally widened toward apex, with strong transverse carinae on outer face, apically fimbriate with spinules elongate and irregularly unequal. Pygidium fringed at distal margin with elongate pale cilia. Sexual dimorphism shown in males by strongly raised corniform tubercle, slightly backward curved, placed anteriorly on epistome; pronotum with wide smooth discal foveola ending proximally with two distinct lateral gibbosities distinctly sulcate between them. Aedeagus with tegmen strongly gibbous, paramera rather short and stout. Epipharynx with anterior margin widely convex and narrowly deeply sinuate at middle; epitorma distinctly marginate; corypha with strong apical spiculae; chaetopariae arranged in two parallel rows.

DISTRIBUTION. Afrotropical region.

Exaphodius excellens Endrödi, 1960 (figs 537, 547-549)

Exaphodius excellens Endrödi, 1960a: 353

TYPE LOCALITY: Yindi, Kibali-Ituri [Zaire].

TYPE DEPOSITORY: Musée Royal de l'Afrique Centrale. Tervuren (holotype male examined)

DESCRIPTION. Length 16-18 mm, stout, convex, nearly quite microreticulate so shiny sericeous; glabrous, elytra toward apex pubescent. Pale brownish, clypeal margin, pronotum sides, juxtasutural interstice and lateral margins of elytra more or less paler. Head with epistome doubly punctured, smaller regular punctures sparse but distinctly denser at centre, larger ones irregularly sparse and distally scattered; clypeus faintly sinuate at middle, widely rounded at sides, quite bordered, border anteriorly thickened and distinctly upturned, completely densely bristled; genae obtusely rounded, shortly bristled, more protruding than eyes; frontal suture distinctly impressed, not tuberculate. Pronotum doubly punctured, smaller punctures very fine, regularly sparse, larger ones sparse on disc but irregularly denser on sides; lateral callus nearly faint; front margin thinly bordered; lateral margins slightly divergent and feebly sinuate backward, strongly bordered; hind angles rounded; base bisinuate, bordered and shortly densely bristled at middle only. Scutellum at base a bit larger than first two elytral interstices, feebly sunk at middle and with few basal punctures. Elytra with striae contiguously punctured, feebly crenulate, apically finer and more superficial, the ninth one not reaching the tenth before shoulder; interstices very thinly bordered near striae, juxtasutural interstice strongly convex, more raised than other ones, latter feebly convex very finely punctured and shortly pubescent toward apex. Fore tibiae apical spur regularly acuminate toward apex. Hind tibiae superior apical spur a bit shorter than first tarsal segment; latter longer than following three combined. Male: epistome with stronger horn-shaped tubercle; pronotum with median wide foveola smooth on disc and ending proximally with two gibbosities distinctly sulcate between them only. Female: epistomal tubercle nearly faint; pronotal foveola punctured on disc too and with the longitudinal groove between proximal gibbosities frontward widened till half of pronotum.

DISTRIBUTION. Central African Republic, Gabon, Zaire.

Genus *GILLETIANUS* Balthasar, 1933 **stat. nov.**

Strongilothorax (?) Mothschulsky, 1860: 42

Aphodius (*Gilletianus*) Balthasar, 1933b: 139; Stebnicka, 1980: 237 (as synonym of *Trichaphodius*)

TYPE SPECIES: *Aphodius proclivis* Balthasar, 1933 (monotypy).

DESCRIPTION. Small size species (length 4-5 mm); oval-elongate, convex, shortly pubescent, shiny with diaphanous tegument. Head brownish with clypeal margin paler; pronotum brownish with lateral margins paler; elytra testaceous more or less darker apically. Head with epistome feebly gibbous, finely punctured; clypeus rounded and regularly curved at sides (at least in females), thinly bordered, border glabrous; genae small, shortly ciliate, feebly more protruding than eyes; latter rather large; frontal suture feebly impressed, not tuberculate. Pronotum transverse, doubly punctured; larger punctures on sides and toward base only; hind angles subtruncate; base bordered. Scutellum small, triangular. Elytra oval, greater width at basal third, finely striate; first stria as wide as second apically; interstices feebly convex, sparsely but distinctly

punctured. Pygidium with some sparse and straight setae. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side irregularly and coarsely punctured. Middle and hind tibiae with rather strong transverse carinae on outer face, apically fimbriate with spinules elongate and progressively unequal. Sexual dimorphism unknown but probably, as in *Trichaphodius* species, shown in males by fore tibiae apical spur relatively stouter and by pronotum more finely punctured. Epipharynx with anterior margin sinuate at middle; epitorma narrowly conical abruptly widened at base; corypha not reaching the front margin, with two elongate apical spiculae; pedia densely pubescent with some stouter antero-lateral spinules; chaetoparia slender and densely arranged; tormae short.

DISTRIBUTION. Oriental region.

REMARKS. We had the opportunity to study the female holotype of *Aphodius proclivis* unfortunately lacking of both posterior tarsi so the comparison of the length of their first segment with hind tibiae superior apical spur was obviously impossible. In spite of the bordered base, *Aphodius proclivis* pertains to the genus-group *Trichaphodius* (sensu lato) from Oriental region due to its habitus and epipharyngeal features. Consequently it may be supposed that some other Oriental species actually ascribed to *Trichaphodius* have to be moved into *Gilletianus*, near surely, for example, *Aphodius reichei* Harold, 1859.

On the other hand it is possible that the genus *Strongilothorax* Motschulsky, 1860 (type species by monotypy: *Aphodius carinipennis* Motschulsky, 1858) might be senior synonym of *Gilletianus*. As a matter of fact, W. Koshantschikov (1916: 192), with the placet of A. Schmidt, established the synonymy of *Aphodius reichei* versus *carinipennis* basing upon types study. Because these taxa are often ambiguously interpreted by subsequent authors, at present it is impossible to identify correctly both *Aphodius carinipennis* and *reichei* due to unavailability of type material. Therefore we cannot be sure of mentioned synonymy and we doubtfully list *Strongilothorax* within the synonyms of *Gilletianus*.

Stebnicka (1980) synonymized *Gilletianus* versus *Trichaphodius* but it is impossible to accept this synonymy owing to the different morpho-anatomical features of the taxa pertaining respectively to these genera as interpreted by their present systematic redefinitions.

Gilletianus proclivis (Balthasar, 1933) **n. comb.** (fig. 538, 550)

Aphodius (*Gilletianus*) *proclivis* Balthasar, 1933b: 139

Aphodius (*Trichaphodius*) *proclivis*; Stebnicka, 1980: 237; M. Dellacasa, 1988a (1987): 182 (as synonym of *comatus*)

TYPE LOCALITY: Yun-nan sen [China].

TYPE DEPOSITORY: Balthasar collection, Národní Muzeum Prague (holotype female examined).

DESCRIPTION. Length 4,5 mm; oval-elongate, convex, shiny, elytra shortly pubescent. Head and pronotum brownish, respectively with clypeal and lateral margins paler; elytra testaceous, more or less darkened apically, with striae blackish and first interstice piceous; legs brown-reddish; antennal club reddish. Head with epistome feebly gibbous;

finely, simply and regularly punctured throughout; clypeus near semicircular, thinly bordered; genae obtusely rounded, feebly more protruding than eyes; frontal suture very finely impressed; front rather coarsely and irregularly punctured. Pronotum transverse, doubly punctured; small punctures more fine and sparse than those on head but coarser and denser on sides; large and irregular punctures spread laterally on disc and more sparsely on basal third; lateral margins subparallel, feebly inward sinuate at middle and slightly divergent toward hind angles; latter subtruncate; base bordered. Scutellum at base nearly as wide as first two elytral interstices, finely punctured on basal half; punctures shortly setigerous. Elytra oval, not denticulate at shoulder; striae fine, subcrenulate; interstices nearly flat, sparsely and finely punctured, only shortly pubescent apically and laterally on posterior half. Fore tibiae apical spur regularly acuminate toward apex and as long as first tarsal segment. Male unknown.

DISTRIBUTION. The species is so far known from type locality only.

REMARKS. M. Dellacasa (1988) listed *Aphodius proclivis* Balthasar, 1933 as junior synonym of *comatus* A. Schmidt, 1920 basing on original description and due to the same patria typica. Otherwise one of us (Bordat) had the opportunity to study some syntypes of *comatus* and with comparison of the type of *proclivis* ascertained that both taxa are selfstanding species.

On the other hand, it is likely that *proclivis* be junior synonym of *Aphodius nigrovirgatus* A. Schmidt, 1911 (*nomen novum* for *Aphodius nigrosulcatus* A. Schmidt, 1909) described from Yunnan but, at present, we cannot formulate the new synonymy because we have not had the chance to study the type specimen of the latter.

Genus *GONAPHODIELLUS* A. Schmidt, 1913

Aphodius (Gonaphodiellus) A. Schmidt, 1913: 133; Balthasar, 1960: 58 (as synonym of *Gonaphodius*); M. Dellacasa, 1988a (1987): 239
Gonaphodiellus; Paulian, 1942: 73

TYPE SPECIES: *Aphodius pacatus* Harold, 1880 (subsequent designation: Paulian, 1942)

DESCRIPTION. Rather small species (length 3.5-6 mm), moderately convex, more or less oval-elongate, feebly shiny, glabrous. More or less dark brownish, with or without elytral paler spots. Head with epistome punctured; clypeus more or less distinctly sinuate at middle, rounded at sides, quite thinly bordered, border bristled; genae obtusely rounded, very shortly ciliate, more protruding than eyes; latter rather large; frontal suture finely impressed, not tuberculate. Pronotum transverse, punctured; hind angles truncate; basal margin not bordered. Scutellum small, narrow, regularly triangular. Elytra more or less strongly denticulate at shoulder; striae fine and punctured, first one more superficial and sometimes faint toward apex; interstices slightly convex, finely punctured. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side rather densely and more or less coarsely punctured. Middle and hind tibiae with feeble transverse carinae on outer face, apically fimbriate with spinules elongate and irregularly unequal. Hind tibiae superior apical spur shorter than first tarsal segment. Pygidium straightly pubescent. Sexual dimorphism shown in males by sparser punctation of head and pronotum; latter with hind angles more distinctly truncate. Epipharynx with anterior margin distinctly

sinuate at middle; epitorma drop-shaped; corypha with two strong apical spiculae; pedia densely pubescent, mixed few stout and large chaetae; chaetopariae slender and elongate.

DISTRIBUTION. Nearctic and Neotropical region.

REMARKS. Balthasar (1960: 58) proposed the synonymy of *Gonaphodiellus* A. Schmidt, 1913 versus *Gonaphodius* Reitter, 1892, stating that no significant differences exist between the two genus-group taxa.

On priority basis, obviously he considered valid *Gonaphodius* and therefore he described (1960: 57) *Aphodius acutecernans* from Bolivia as pertaining to this genus-group taxon.

Later, Balthasar himself (1964: 150) rejected said synonymy and recognized valid both involved genus-group taxa stating that only one Palearctic species pertains to *Gonaphodius*.

Gonaphodiellus pacatus (Harold, 1880) (figs 539, 551)

Aphodius pacatus Harold, 1880: 37

Aphodius (*Gonaphodiellus*) *pacatus*; A. Schmidt, 1913: 133

Gonaphodiellus pacatus; Paulian, 1942: 73

TYPE LOCALITY: Fusagasugà [Columbia].

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (lectotype female examined).

DESCRIPTION. Length 5.5 mm, oval-elongate, feebly convex; moderately shiny, elytra toward apex microreticulate and dull; glabrous. Brown-yellowish, epistoma and pronotum disc darker. Head with epistome finely, rather sparsely and subregularly punctured; clypeus slightly sinuate at middle, widely rounded at sides, lateral margins aligned with genae; latter small, rounded, feebly more protruding than eyes; frontal suture finely impressed, not tuberculate. Pronotum widened toward base, doubly punctured, smaller punctures like those of head; large punctures, twice to three times larger than small punctures, placed toward sides and base only; lateral margins, finely bordered, nearly straight; hind angles truncate and slightly inward sinuate; base not bordered. Elytra rather elongate, shoulder with small denticle; striae fine, subcrenulate, ninth one longer than eighth, not reaching the tenth before shoulder; interstices feebly convex, finely sparsely punctured. Fore tibiae normally tridentate and with several proximal teeth at outer margin, their apical spur straight, progressively acuminate toward apex. Hind tibiae superior apical spur shorter than first tarsal segment; latter as long as following three combined. Pygidium with eight straight setae. Male unknown.

DISTRIBUTION. Columbia.

REMARKS. The **female** specimen **lectotype, herein designated**, bears the following labels:

- 1) white, handwritten: Fusagasugà;
- 2) white, printed: ex Musaeo Harold;
- 3) red, handwritten: *Aphodius pacatus* Harold, 1880, lectotypus, P. Bordat & G. Dellacasa des. 1998.

Genus *GONAPHODIUS* Reitter, 1892 **stat. nov.**

Aphodius (*Gonaphodius*) Reitter, 1892: 240

TYPE SPECIES: *Aphodius postangulus* Reitter, 1887 (junior synonym of *Aphodius scoparius* Harold, 1877) (original designation).

DESCRIPTION. Medium size species (length 5.5-7 mm) convex, shiny, glabrous. Blackish. Head with epistome gibbous, doubly punctured; clypeus sinuate at middle, rounded at sides, finely bordered, border not bristled; genae rounded, rather elongately ciliate, more protruding than eyes; latter rather small; frontal suture not tuberculate. Pronotum doubly punctured, feebly explanate at sides; hind angles distinctly truncate and inwardly sinuate; base bisinuate, not bordered. Scutellum small, triangular. Elytra convex, not denticulate at shoulder; striae fine, punctured; interstices flat. Hind femora, at least with one belt of setigerous punctures near front and hind margins. Fore tibiae with apical spur very long, at least longer than first two tarsal segments combined; distally tridentate and proximally not serrulate at outer margin; upper side smooth. Middle tibiae superior apical spur longer than first tarsal segment. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules elongate and irregularly unequal. Pygidium with somewhat sparse, moderately elongate, recumbent pubescence, mixed several straight setae toward apical margin; latter rather sparsely and elongately ciliate. Sexual dimorphism shown in males by epistome relatively more coarsely punctured; by more transverse and more densely punctured pronotum; by fore tibiae apical spur strongly elongate and stout, downward bent and hooked inward apically, nearly as long as first four tarsal segments combined; by inferior apical spur of middle tibiae relatively more elongate, falciform. Aedeagus with slender and elongate paramera distinctly upturned apically. Epipharynx transverse; anterior margin sinuate at each side; epitorma campaniform; corypha with four strongly apical spiculae; chaetopariae rather stout; pedia enough finely pubescent near epitorma and with some stout chaetae mixed; tormae elongate.

DISTRIBUTION. Eastern Palearctic region.

Gonaphodius scoparius (Harold, 1877) **n. comb.** (figs 540, 552-554)

Aphodius scoparius Harold, 1877: 112

Aphodius (*Acrossus*) *scoparius*; A. Schmidt, 1907b: 72

Aphodius (*Gonaphodius*) *scoparius*; A. Schmidt, 1913: 133

TYPE LOCALITY: "Kiakhta" [Russia].

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 5.5-7 mm, rather convex, shiny, glabrous. Piceous. Head with epistome distinctly gibbous, doubly punctured, smaller and finer punctures throughout scattered; large punctures, twice or three times larger than small punctures, distally placed only; clypeus distinctly sinuate at middle, widely rounded at sides; genae rounded, more protruding than eyes; frontal suture not tuberculate. Pronotum doubly punctured; smaller punctured like those on head; large punctures, five to seven times larger than small punctures, irregularly sparse toward sides and base only; fore angles

rather acute; hind angles wide, truncate and distinctly inward sinuate, proximal subangle of truncature very distinct; lateral margins slightly rounded and thickly bordered; base bisinuate, not bordered. Scutellum with some small punctures near base. Elytra with narrow but rather deep and subcrenulate striae, sixth one stopped before base and joined basally to fifth by a more or less distinct oblique striola. Fore tibiae inferior carina denticulate. Hind tibiae superior apical spur somewhat longer than first tarsal segment; latter shorter than following three combined. Male: pronotum relatively less densely punctured; fore tibiae apical spur, very stout and elongate, downward bent and hooked inward apically, nearly as long as first four tarsal segments combined; inferior apical spur of middle tibiae falciform and rather abruptly inward curved. Female: pronotum relatively more densely punctured; fore tibiae apical spur normally shaped; inferior apical spur of middle tibiae nearly straight.

DISTRIBUTION. North-eastern Tibet, Chinese Turkestan, Mongolia, Russia.

Genus *HARMODACTYLUS* Péringuey, 1901

Harmodactylus Péringuey, 1901: 370

TYPE SPECIES: *Harmodactylus oscitans* Péringuey, 1901 (monotypy).

DESCRIPTION. Medium size species (length 5.5-6 mm), convex, shiny; nearly glabrous, elytra, laterally and apically only, with few sparse and extremely short hairs. Dark brown-reddish. Head distinctly narrowed frontward, subtriangular; epistome gibbous, punctured; clypeus anteriorly truncate, faintly sinuate at middle, nearly straight at sides, finely bordered, border anteriorly strongly upturned, not bristled; genae acutely angulate, not ciliate, strongly more protruding than eyes; latter medium sized; frontal suture distinct, feebly raised, not tuberculate. Pronotum transverse, doubly and irregularly punctured; lateral margins and base bordered; hind angles subtruncate. Scutellum small, triangular. Elytra oval, with very small humeral denticle; striae punctured, crenulate; interstices feebly convex on disc, strongly cariniform apically and there the first one as wide as second; plica epipleurali wide. Fore tibiae very slender, distinctly outwardly arcuate, proximally feebly serrulate at outer margin; upper side smooth; the two distal teeth fused in a strongly bifid process; the third tooth very small; the apical spur situated at half of inner margin. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with spinules rather short and equal. Middle tarsi longer than tibiae. Hind tarsi as long as tibiae. Pygidium with some elongate setae at distal margin. Sexual dimorphism shown in males by fore tibiae relatively more slender and elongate; their apical spur nearly straight and relatively more elongate. Aedeagus bodiliform, with elongate tegmen and very short paramera. Epipharynx transverse, front margin sinuate at each side; epitorma drop-shaped, corypha with five (or six?) apical spiculae; chaetopariae stout; paria finely pubescent, laterally some spines mixed; tormae elongate.

DISTRIBUTION. Southern Afrotropical region.

REMARKS. *Harmodactylus oscitans* Péringuey is known only by one female specimen (holotype) and secondary sexual characters are extrapolated from male specimens of

Aphodius solus Bordat. As a matter of fact, the features of epipharynx, elytra, posterior legs as well as whole habitus lead us to consider the two involved species-group taxa pertaining to the same genus, i. e.: *Harmodactylus*.

On the other hand it seems impossible to propose *Aphodius solus* as junior synonym of *oscitans* because the scarce material at our disposal and the rather significant discriminating characters between the two species-group taxa. Nevertheless, for *Aphodius* (*Cinacanthus*?) *solus* Bordat, we herein propose the **new combination**: *Harmodactylus solus* (Bordat, 1990).

Harmodactylus oscitans Péringuey, 1901 (figs 555, 559)

Harmodactylus oscitans Péringuey, 1901: 371

TYPE LOCALITY: "Cape Colony" (Cape Town) [South Africa].

TYPE DEPOSITORY: South African Museum. Cape Town (holotype female examined).

DESCRIPTION. Length 5.5-6 mm, distinctly convex, shiny, nearly glabrous, elytra laterally and apically very finely, shortly and rather sparsely pubescent. Dark brown-reddish; clypeus, pronotum and elytral margins paler; antennal club piceous. Head broadly triangularly shaped; epistome gibbous, finely, rather regularly and densely punctured; punctures less dense on disc, only laterally slightly larger and coarser; clypeus anteriorly subtruncate, only faintly sinuate at middle, laterally straight, only subsinuate before genae, quite bordered, border anteriorly thickened and strongly upturned, laterally fine; genae large, acutangulate, not ciliate, considerably more protruding than eyes and forming with clypeal margin a broad obtuse triangle slightly emarginate at apex; frontal suture feebly raised at middle, faintly grooved laterally, not tuberculate. Pronotum transverse, moderately convex, subparallel-sided, only toward base slightly widened, doubly punctured; smaller punctures finer and somewhat sparser than those of head and throughout scattered; large punctures, five to seven times larger than small punctures, irregular rather dense laterally, on disc only they are three times larger than the smaller ones and very sparse; lateral margins feebly curved, distinctly bordered, border glabrous; hind angles subtruncate, not at all inwardly sinuate; basal margin distinctly bisinuate, thinly bordered. Scutellum at base as wide as two first interstices, with some punctures on basal half only. Elytra finely striate on disc; striae progressively wider toward apex where they are nearly as wide as interstices, distinctly crenulate on disc and on sides but apically their punctures are visible at bottom only, the sixth stria shortened preapically; interstices moderately convex on disc, strongly cariniform apically, finely, distinctly and rather densely punctured; apically tenth one with recumbent short pale hairs; epipleura wide, glabrous. Fore tibiae subparallel-sided, outwardly remarkably incurvate; their two distal teeth joined each other in a strongly bifid process, the third tooth very small, acuminate; their apical spur stout, rather short, outwardly directed, inserted nearly at half of inner tibial margin and more or less at third outer tooth level. Inferior apical spur of middle tibiae normally shaped. Hind tibiae superior apical spur longer than first tarsal segment; latter as long as following three combined. Male unknown.

DISTRIBUTION. The species is known from type locality and, so far, only by holotype female specimen.

Genus *HEMICYCLIUM* A. Schmidt, 1913

Aphodius (*Hemicyclium*) A. Schmidt, 1913: 129; M. Dellacasa, 1988a (1987), 240

Hemicyclium; Paulian, 1942: 60

Aphodius (*Aphodius* Artengruppe *Hemicyclium*); Endrödi, 1960b: 175

Aphodius (Artengruppe *Hemicyclium*); Endrödi, 1964a: 214

TYPE SPECIES: *Aphodius unicornutus* A. Schmidt, 1909 (subsequent designation: Paulian, 1942).

DESCRIPTION. Medium size species (length 7.5-11 mm), elongate, strongly convex, shiny, glabrous. Quite brown-reddish. Head with epistome strongly gibbous or with a more or less raised horn-shaped process, punctured; clypeus sinuate at middle, rounded at sides, quite thinly bordered, border not bristled; genae obtusely angulate, rather elongately and sparsely ciliate, more protruding than eyes; latter rather large; frontal suture finely impressed, with lateral tubercles more or less raised. Pronotum transverse, doubly punctured; anterior and lateral margin bordered; base bisinuate, not bordered. Scutellum small, triangular. Elytra oval-elongate, without humeral denticle; striae fine and punctured, ninth not joined to tenth before shoulder. Fore tibiae distally tridentate and proximally with a small supplementary denticle at outer margin; their apical spur cylindrical and apically rounded; upper side finely and densely punctured. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules elongate and alternately unequal. Middle and hind tarsi as long as or longer than tibiae. Pygidium with sparse and elongate cilia at apical margin. Sexual dimorphism very evidently shown in males by epistome with a simple horn-shaped process more or less raised; front margin of pronotum with large deep foveola ending posteriorly in a rather strong bifid gibbosity; punctation of head and pronotum always relatively finer. Aedeagus with paramera rather short and with a protruding membranous process apically. Epipharynx transverse; anterior margin sinuate at middle; epitorma regularly narrowed from base till front margin; corypha with four strong apical spiculae; chaetopariae fine, dense, proximally extended; pedia pubescent with stout chaetae antero-laterally mixed; nesium broadly elliptical.

DISTRIBUTION. Afrotropical region.

REMARKS. *Aphodius unicornutus* A. Schmidt, 1909 was described on a minor male specimen thus epistomal and pronotal features are feebly stressed.

Though originally compared with *Aphodius* (*Craterocyphus*) *rhinoceros* Reiche, 1847, furtherly A. Schmidt (1913) ascribed *Aphodius unicornutus* to his new subgenus *Hemicyclium* separating it from *Craterocyphus* whose taxa have pronotum with strong horn-shaped basal process.

Endrödi (1964a) moved *Aphodius unicornutus* from subgenus *Hemicyclium* to *Hauserius* Balthasar, 1935. It is impossible to accept his proposal because the taxon was previously designated by Paulian (1942) type species of *Hemicyclium*, herein considered valid genus and not synonym of *Hauserius*.

Hemicyclium unicornutum (A. Schmidt, 1909) (figs 556, 560-562)

Aphodius unicornutus A. Schmidt, 1909c: 111

Aphodius (*Hemicyclium*) *unicornutus*; A. Schmidt, 1913: 129; M. Dellacasa, 1988a (1987): 212

Hemicyclium unicornutum; Paulian, 1942: 61

Aphodius (*Aphodius* Artengruppe *Hauserius*) *unicornutus*; Endrödi, 1960b: 176

Aphodius (Artengruppe *Hauserius*) *unicornutus*; Endrödi, 1964a: 214

TYPE LOCALITY: "Rhodesia" [Zimbabwe].

TYPE DEPOSITORY: Naturhistoriska Riksmuseet. Stockholm (holotype male examined).

DESCRIPTION. Length 7.5-9 mm, strongly convex, shiny, glabrous. Bright brown-reddish, front and pronotum darker on disc. Head rather wide; epistome gibbous, doubly punctured; fine punctures throughout scattered, large punctures, four or five times larger than small, irregular and sparse, are only on epistome sides and on front; clypeus feebly sinuate at middle, rounded at sides; genae obtusely rounded, more protruding than eyes. Pronotum parallel-sided at basal half; with punctation of the same kind and dimension as that of head but differently scattered: large punctures are denser laterally, toward fore and hind angles, than on disc, and quite lacking at its centre; lateral margins and hind angles thickly bordered. Scutellum with few small punctures on basal half. Elytra with striae as wide apically as dorsally, not crenulate; interstices convex, very finely and sparsely punctured. Hind tibiae superior apical spur as long as first tarsal segment; latter as long as following two combined. Male: epistome with strong, horn-shaped central tubercle backward curved and acuminate at tip; lateral tubercles of frontal suture distinctly raised; pronotum deeply foveolate near middle of front margin, proximal margin of foveola with a strongly raised transverse carina distinctly bifid at tip; relatively less densely punctured. Female: head and pronotum without particular features; relatively more densely punctured.

DISTRIBUTION. Tanzania, Zaire, Rwanda, Mozambique, Zimbabwe and South Africa

Genus *HEPTAULACUS* Mulsant, 1842

Heptaulacus Mulsant, 1842: 296; Tesař, 1957: 179; G. Dellacasa, 1983: 428

Heptaulaculus G. Dellacasa & Baraud, 1978: 62; G. Dellacasa, 1983: 430 (as synonym of *Heptaulacus*)

TYPE SPECIES: *Scarabaeus testudinarius* Fabricius, 1775 (subsequent designation: Tesař, 1957)

DESCRIPTION. Small species (length 3-4 mm), exceptionally medium sized (length 5-8 mm), elongate, moderately convex, feebly shiny, yellowish pubescent. Blackish, margins of head and pronotum more or less widely reddish; elytra either reddish or yellow-testaceous with several small blackish spots. Head with epistome gibbous, either rugosely or granulately punctured, punctures setigerous; clypeus sinuate at middle, rounded at sides, distinctly bordered, border sparsely bristled; genae obtuse, sparsely ciliate, more protruding than eyes; latter medium sized; frontal suture nearly faint, not at all tuberculate. Pronotum transverse, convex, strongly and coarsely punctured, mostly setigerous punctures bean-shaped, umbilicate or horse-shoe shaped; sides more or less thinly bordered; hind angles obliquely truncate; base not bordered. Scutellum small,

triangular, punctured. Elytra with less than ten striae, elongate, rather convex, striae wide, groove-shaped, distinctly punctured; interstices more or less wider than striae, shiny or dull, flat or convex or costiform, usually serially punctured laterally, punctures setigerous, setae backward recumbent. First segment of hind tarsi usually longer, rarely shorter or as long as, superior apical spur of tibiae. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side more or less densely and coarsely punctured. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules elongate and irregularly unequal. Pygidium shortly and sparsely pubescent; its apical margin elongately ciliate. Sexual dimorphism shown in males by fore tibiae apical spur hooked apically and by middle tibiae with one apical spur only. Aedeagus small, with short and stout paramera, acuminate and sometimes abruptly curved apically. Epipharynx widely rounded at sides, feebly bisinuate at anterior margin; epitorma drop-shaped; corypha with strong apical spiculae distinctly protruding; pedia pubescent with short and stout chaetae variously arranged; chaetopariae dense and moderately elongate.

DISTRIBUTION. Palearctic region.

Heptaulacus testudinarius (Fabricius, 1775) (figs 557, 563-565)

Scarabaeus testudinarius Fabricius, 1775: 19

Heptaulacus testudinarius; Mulsant, 1842: 300; Tesař, 1957: 179; G. Dellacasa, 1983: 432

Aphodius (*Heptaulacus*) *testudinarius*; Landin, 1956a: 219 (lectotype designation)

Heptaulaculus testudinarius; G. Dellacasa & Baraud, 1978: 64

TYPE LOCALITY: "Anglia" [Great Britain].

TYPE DEPOSITORY: Zoological Museum. Kiel (lectotype not examined).

DESCRIPTION. Length 3-4.5 mm, elongate, convex, moderately shiny, yellowish pubescent. Blackish; elytra ferrugineous, more or less densely blackish spotted. Head with epistome gibbous, subgranulately, more strongly distally, punctured, punctures elongately setigerous; clypeus distinctly sinuate at middle, rounded at sides; genae obtuse, nearly obliquely subtruncate, more protruding than eyes; frontal suture arcuate and feebly impressed. Pronotum moderately convex; coarsely, densely and nearly regularly punctured, punctures bean-shaped, umbilicate, mostly setigerous, setae backward recumbent; side subparallel, elongately and sparsely ciliate; hind angles truncate; base bisinuate, shortly and sparsely bristled, not bordered. Scutellum microreticulate, curved at sides, feebly concave. Elytra rather convex; interstices costiform, narrower than groove-shaped striae, with lateral rows of strong and somewhat oval, setigerous punctures, setae obliquely curved backward; stiae wide, microreticulate, dull, with large, superficial and irregularly scattered punctures. Upper side of fore tibiae coarsely and rather sparsely punctured throughout. Hind tibiae superior apical spur shorter than first tarsal segment; latter longer than following two combined. Male: fore tibiae apical spur hooked apically; middle tibiae with one apical spur only, apically truncate and without widened lobe at inner distal margin. Female: fore tibiae apical spur regularly acuminate apically; middle tibiae with two apical spurs.

DISTRIBUTION. Europe

Genus *KOREOXYOMUS* Kim, 1996*Koreoxyomus* Kim, 1996: 102TYPE SPECIES: *Koreoxyomus koreanus* Kim, 1996 (original designation).

DESCRIPTION. Small apterous species (length 4-5 mm), oblong, moderately shiny, convex, nearly glabrous. More or less dark piceous-reddish, legs and antennae brown-reddish. Head large, transverse; epistome gibbous, rugosely and irregularly punctured, frontward with two arcuate carinae; clypeus feebly sinuate at middle, denticulate at sides, thinly bordered, border shortly bristled; genae obtusely angulate, shortly ciliate, distinctly more protruding than eyes; latter rather small; frontal suture distinctly impressed, not tuberculate; front coarsely punctured. Pronotum transverse, moderately convex, with median longitudinal groove, coarsely doubly punctured; larger punctures rather sparse on disc denser on sides; latter widely flattened toward front angles and distinctly narrowed toward base, distinctly serrate, shortly bristled; hind angles obtusely rounded; basal margin crenulate, not bordered. Scutellum small, triangular, with curved sides, feebly convex. Elytra short, regularly oval; strongly denticulate at shoulder; striae wide, strongly impressed, with rather small punctures placed at proximal apex of a cordiform foveola; interstices narrow, cariniform, odd ones larger and more raised than even, with extremely short yellowish hairs on preapical declivity. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side coarsely and sparsely punctured. Middle and hind tibiae with rather feeble transverse carinae on outer face; apically fimbriate with spinules short and equal. Hind tibiae superior apical spur shorter than first tarsal segment; latter as long as following three combined. Pygidium densely and coarsely punctured, punctures shortly setigerous; its apical margin sparsely and rather elongately ciliate. Sexual dimorphism shown in males by apical spur of fore tibiae curved inward apically and inferior apical spur of middle tibiae shortened and curved inward at apex. Aedeagus with paramera slender, elongate, curved, slightly widened and shortly pubescent apically. Epipharynx widely rounded at sides; chaetopariae rather densely arranged and moderately elongate; epitorma widely campaniform; corypha not more protruding than front margin and with strong and elongate apical spiculae; pedia pubescent toward corypha, antero-laterally with oblique belt of strong chaetae; chaetopariae rather stout, elongate and moderately dense.

DISTRIBUTION. South Korea.

Koreoxyomus koreanus Kim, 1996 (figs 558, 570-572)*Koreoxyomus koreanus* Kim, 1996: 103

TYPE LOCALITY: Mt. Kyebangsang, Hongchong, South Korea.

TYPE DEPOSITORY: Sungshin University. Seoul (paratypes of both sexes, examined).

DESCRIPTION. Length 4-5 mm, oblong, convex, moderately shiny, nearly glabrous. Piceous or piceous-reddish; head, front angles of pronotum and legs brown-reddish; antennal club brown-yellowish. Head wide, transverse, with epistome convex, subgibbous toward frontal suture, frontward with two transverse feeble but distinct and arcuate carinae, rugosely, irregularly and coarsely punctured; clypeus widely feebly

sinuate at middle; denticulate at sides; genae depressed, obtusely angulate, shortly bristled, markedly more protruding than eyes; frontal suture finely impressed, not tuberculate; front distinctly, nearly regularly punctured. Pronotum transverse, broadened and widely flattened toward front angles; latter rounded; with distinct median longitudinal groove; strongly, irregularly and doubly punctured; larger punctures cariose, denser on sides, sparser on disc, mixed simple punctures much smaller but distinct; sides rounded, strongly narrowed toward base, with border distinctly serrulate and shortly bristled; hind angles rounded; base not bordered but crenulate by a belt of large contiguous punctures strongly impressed. Scutellum with curved sides, feebly convex, with few superficial punctures on basal half. Elytra rather shortly oval, distinctly convex, strongly and acutely denticulate at shoulder; striae wide and deep, first joined apically to tenth, second to ninth, third to eighth, other ones shortened and joined among them before third and eighth linking; their punctures rather small but deep, rounded, placed at apex of an elongate rather superficial and cordiform foveola; interstices narrow, cariniform; odd ones wider and more raised than even and with extremely short yellowish hairs on preapical declivity. Fore tibiae rather slender and elongate, first tarsal segment longer than following two combined but shorter than apical spur. Hind tibiae superior apical spur shorter than first tarsal segment; latter longer than following three combined. Male: apical spur of fore tibiae distinctly inward curved apically; inferior apical spur of middle tibiae shortened and inward curved. Female: apical spur of fore tibiae nearly straight; inferior apical spur of middle tibiae relatively less shortened and not inward curved.

DISTRIBUTION. Species known from type locality only.

Genus *KOSHANTSCHIKOVIVUS* A. Schmidt, 1913

Aphodius (*Koshantschikovius*) A. Schmidt, 1913: 149; Balthasar, 1964: 299; Landin, 1967: 202 (as synonym of *Blackburneus*); M. Dellacasa, 1988a (1987): 149

Koshantschikovius; Paulian, 1942: 78

Aphodius (*Aphodius* Artengruppe *Koshantschikovius*); Endrödi, 1960b: 199

Aphodius (Artengruppe *Koshantschikovius*); Endrödi, 1964a: 273

Aphodius (group *Koshantschikovius*); Endrödi & Rakovič, 1981: 54

TYPE SPECIES: *Aphodius substriatus* A. Schmidt, 1911 (subsequent designation: Paulian, 1942).

DESCRIPTION. Rather small species (length 4-6 mm), convex, stout, shiny or sericeous; glabrous, elytra sometimes very finely pubescent. Brown-reddish or dark brown. Head with epistome more or less distinctly gibbous, punctured; clypeus sinuate at middle, obtusely rounded at sides, finely bordered, border not bristled; genae obtusely rounded, ciliate, more protruding than eyes; latter medium sized; frontal suture impressed, not tuberculate. Pronotum transverse, doubly punctured; sides with strong callus obtecting, in dorsal view, lateral margins; latter bordered; hind angles obliquely truncate, sometimes feebly inward sinuate; base bordered. Scutellum small, pentagonal with sides parallel toward base, at base narrower than first two elytral interstices. Elytra punctato-striate; first stria apically as wide as second; interstices flat or more or less convex. Fore tibiae

distally tridentate and proximally feebly serrulate at outer margin, upper side regularly and distinctly punctured. Middle and hind tibiae with rather strong transverse carinae on outer face, apically fimbriate with spinules elongate and very irregularly unequal. Hind tibiae superior apical spur shorter than first tarsal segment. Pygidium with some erect sparse setae on apical half. Sexual dimorphism shown in males by metasternal plate distinctly grooved and less strongly punctured. Aedeagus with paramera short, curved apically. Epipharynx with anterior margin shortly bristled and sinuate at middle; epitorma conical, shortened frontward; corypha with two stout apical spiculae; chaetopariae slender; pedia densely finely pubescent, stout sparse chaetae mixed.

DISTRIBUTION. Afrotropical and Oriental species could pertain to this genus intended *sensu lato*.

REMARKS. A. Schmidt defined this genus-group taxon with a short diagnosis, writing that pertaining species are glabrous, shiny and with pronotum disc mostly impunctate.

In 1922 he modified the description stating that species are nearly always glabrous. Nevertheless *Aphodius substriatus*, type species designated by Paulian in 1942, does not perfectly fit the generic characteristics because, among other, it is not shiny and has pronotum distinctly punctured on disc also. Therefore *Koshantschikovius* in this way redefined, cannot include forty one species recorded by M. Dellacasa (1991) and most of them has to be ascribed to other already described or new genera.

Landin (1967) synonymized *Koshantschikovius* versus *Blackburneus* stating that the sole difference between them is represented by basal margin of pronotum either bordered or not. Effectively this character utilized alone is not sufficient to separate the two genus-group taxa and the Swedish author moved the most of *Koshantschikovius* Afrotropical species to *Blackburneus*. Nevertheless Landin excluded from the rearrangement a small number of taxa, supposing that they could pertain to other genera, and, among them, *Aphodius substriatus* A. Schmidt, 1911 that he retained might be more correctly placed in *Pleuraphodius*.

Obviously it is impossible to accept this proposal because *Aphodius substriatus* was designated type species of *Koshantschikovius* by Paulian twenty nine years before.

Koshantschikovius substriatus (A. Schmidt, 1911) (figs 566, 573-575)

Aphodius substriatus A. Schmidt, 1911b: 48

Aphodius (*Koshantschikovius*) *substriatus*; A. Schmidt, 1913: 149; M. Dellacasa, 1988a (1987): 241

Koshantschikovius substriatus; Paulian, 1942: 79

Aphodius (Artengruppe *Koshantschikovius*) *substriatus*; Endrödi, 1964a: 275

TYPE LOCALITY: Harrar [Ethiopia].

TYPE DEPOSITORY: Naturhistoriska Riksmuseet. Stockholm (type examined).

DESCRIPTION. Length 5-6 mm, stout, convex, sericeous; nearly glabrous, elytra very shortly pubescent. Brown-reddish; epistome, pronotum disc and elytral suture piceous; legs brown-reddish. Head with epistome distinctly gibbous; punctured, medium size punctation simple, regular and rather densely scattered throughout, somewhat finer anteriorly; clypeus feebly sinuate at middle, subangulose at sides, quite thinly bordered,

border anteriorly upturned; genae obtusely rounded, more protruding than eyes; frontal suture distinctly impressed, not tuberculate. Pronotum transverse, simply and densely punctured; punctation more or less like those of head but on sides with twice larger and rather denser punctures mixed; lateral margins thinly bordered; hind angles feebly sinuate; base bordered. Scutellum with few small punctures near base. Elytra not denticulate at shoulder; striae rather large, very thinly bordered, faintly crenulate; interstices convex, finely and sparsely punctured; toward apex striae narrowed and interstices flat. Hind tibiae superior apical spur shorter than first tarsal segment; latter slightly longer than following two combined. Male: metasternal plate distinctly foveolate and relatively more sparsely punctured. Female: metasternal plate nearly flat and more densely punctured.

DISTRIBUTION. Ethiopia, Kenya, Cameroon.

Genus *LABARRUS* Mulsant & Rey, 1870

Aphodius (*Labarrus*) Mulsant & Rey, 1870b (1869): 516; Reitter, 1892: 201 (as synonym of *Nialus*); G. Dellacasa, 1983: 270

Aphodius (*Pseudocalamosternus*) Balthasar, 1936: 1 (**n. syn.**)

Labarrus; Ádám, 1994: 14

TYPE SPECIES: *Scarabaeus lividus* Olivier, 1789 (monotypy).

DESCRIPTION. Small or medium size species (length 3-7 mm), elongate, subcylindrical, more or less shiny or dull, glabrous. Brown-yellowish; usually head, pronotum and elytra widely darkened; inferiorly yellowish. Head with epistome moderately gibbous, either microreticulate or not, punctured; clypeus sinuate at middle, rounded at sides, thinly bordered, border sparsely and elongately bristled; genae rounded, ciliate, feebly or not more protruding than eyes; latter medium sized; frontal suture tuberculate. Pronotum convex, doubly and sparsely punctured, usually shiny; not bordered at base. Scutellum small, pentagonal. Elytra convex, subparallel-sided or feebly widened backward; striae fine, crenulate; interstices flat or feebly convex, sparsely and superficially punctured. Fore tibiae distally tridentate and proximally faintly serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules short and equal. Pygidium with dense and moderately elongate pubescence, mixed some very elongate and straight setae; its apical margin with some very elongate cilia. Sexual dimorphism shown in males by more strong central tubercle of frontal suture; by less dense pronotal punctation and by different shape of fore tibiae apical spur. Aedeagus elongate; paramera generally slender, widely membranous and bristled apically. Epipharynx transverse, nearly straight at sides, faintly sinuate at front margin; epitorma drop-shaped; corypha with stout and short apical spiculae; pedia with prophobae short and dense mixed few stout chaetae; chaetopariae rather short, stout and dense; apophobae sparsely arranged; apotormae elongate.

DISTRIBUTION. Subcosmopolitan.

REMARKS. The study of the female holotype of *Aphodius rigidus* Balthasar, 1936, type species by monotypy of the subgenus *Pseudocalamosternus* Balthasar, 1936, stressed

that it represents a particular case of symmetrical teratology as already remarked in *Esymus pusillus* (Herbst, 1789) by Costessèque (1995) and furthermore noted in one male specimen of *Neagolius schlumbergeri* (Seidlitz, 1891) from "Col du Tourmalet (Hautes-Pyrénées)" preserved in Bordat's collection.

Moreover *Aphodius* (*Pseudocalamosternus*) *rigidus* is nearly doubtless senior synonym of *Labarrus hoabinhensis* (Balthasar, 1946) but the new synonymy at species-group level is not herein proposed because we think inappropriate that a teratological specimen be the name-bearing type of a taxon.

Labarrus lividus (Olivier, 1789) (figs 567, 576-578)

Scarabaeus lividus Olivier, 1789: 86

Aphodius lividus; Creutzer, 1799: 44

Aphodius (*Labarrus*) *lividus*; Mulsant & Rey, 1870b (1869): 516; G. Dellacasa, 1983: 270; Bordat, 1990b: 32 (neotype)

Aphodius (*Nialus*) *lividus*; Reitter, 1892: 202

Labarrus lividus; Ádám, 1994: 14

TYPE LOCALITY: Vincennes, environs de Paris [France].

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (neotype male examined)

DESCRIPTION. Length 3.5-4.5 mm, subelongate, convex, moderately shiny, glabrous. Head anteriorly pale reddish at each side; epistome brownish; pronotum disc and two small lateral spots dark reddish, base and sides yellowish; elytra brown-reddish, juxtasutural interstice and a wide elongate discal spot brownish, suture blackish; under face quite yellowish; sometimes discal spot of pronotum strongly reduced and elytra quite yellow-brownish; rarely discal spot of pronotum and of elytra widened, latter with sides yellowish only. Head with epistome gibbous, microreticulate so moderately shiny, distinctly and subregularly punctured anteriorly, punctation subrugose on median gibbosity; clypeus sinuate at middle, rounded at sides, border moderately upturned; genae obtusely rounded, slightly more protruding than eyes; frontal suture distinct and tuberculate; front feebly impressed at middle. Pronotum strongly convex, superficially microreticulate so rather shiny, doubly punctured; larger punctures sparsely and irregularly scattered, mixed much more small ones; sides subparallel, sparsely ciliate, distinctly bordered; hind angles obtusely rounded; base not bordered. Scutellum flat, microreticulate, somewhat widely depressed longitudinally; sides slightly convergent basally. Elytra enough convex, subparallel-sided, not widened posteriorly; striae fine, distinctly punctured and feebly crenulate; interstices nearly flat, distinctly microreticulate so rather dull, sparsely and superficially punctured. Hind tibiae longer than tarsi; latter with slender segments; first one shorter than superior apical spur; latter compressed and widened at middle, feebly hooked apically. Male: median tubercle of frontal suture relatively stronger, conical, rounded and strongly alutaceous at top; lateral ones transverse but distinct; metasternal plate concave; fore tibiae apical spur stout, rounded apically; middle tibiae inferior apical spur obliquely truncate apically. Female: median tubercle of frontal suture relatively weaker; lateral ones faint; metasternal plate flat; fore tibiae apical spur slender, apically acuminate; middle tibiae inferior apical spur

regularly acuminate apically.

DISTRIBUTION. Probably cosmopolitan.

Genus *LIMARUS* Mulsant & Rey, 1870

Aphodius (*Limarus*) Mulsant & Rey, 1870b (1869): 504; G. Dellacasa, 1983: 272

Limarus; Ádám, 1994: 13

TYPE SPECIES: *Aphodius zenkeri* Germar, 1813 (monotypy).

DESCRIPTION. Rather small species (length 4-6 mm), convex, shiny, nearly glabrous or pubescent. Blackish with reddish elytra; latter often with several blackish spots. Head with epistome convex, more or less densely and coarsely punctured; clypeus widely sinuate at middle, angulate or subdentate at sides, rather thickly bordered, border glabrous and slightly upturned at front angles; genae obtusely rounded, ciliate, more protruding than eyes; latter medium sized; frontal suture trituberculate. Pronotum transverse, densely and coarsely punctured; sides bordered; hind angles obtusely rounded; base not bordered. Scutellum small, triangular, punctured. Elytra convex, widened backward; striae wide, superficial, feebly crenulate; interstices flat, convex or cariniform, either nearly glabrous or pubescent. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules rather stout, moderately elongate and irregularly unequal. Pygidium with few and elongate straight setae; its apical margin with several cilia rather sparse and elongate. Sexual dimorphism shown in males by pronotum not narrowed frontward; by more distinct tubercles of frontal suture and by inferior apical spur of middle tibiae truncate and hooked apically. Aedeagus stout, with short, curved paramera, membranous apically. Epipharynx sinuate at front margin, widely rounded at sides; epitorma drop-shaped; corypha with short and stout apical spiculae; pedia pubescent toward apex only and with short, sparse and stout chaetae; chaetopariae stout, dense and moderately elongate.

DISTRIBUTION. Palearctic region.

Limarus zenkeri (Germar, 1813) **n. comb.** (figs 568, 583-585)

Aphodius zenkeri Germar, 1813: 118

Aphodius (*Limarus*) *zenkeri*; Mulsant & Rey, 1870b (1869): 504

TYPE LOCALITY: "gegend um Halle" [Germany].

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 4-5 mm, oblong, convex, shiny, nearly glabrous. Blackish; clypeal margin, sides of pronotum and elytra brown-reddish; latter with several small, cloudy, blackish spots more or less regularly arranged in arcuate oblique belts; sometimes elytral blackish spots with definite margins, moreover with two other spots on each elytron apically; rarely elytra quite reddish. Head with epistome gibbous, distinctly subcarinate at middle, coarsely punctured, punctation subrugose distally; clypeus widely sinuate at middle, acutely angulate at sides; genae obtusely rounded, feebly auriculate,

more protruding than eyes; frontal suture trituberculate. Pronotum strongly convex, doubly, irregularly and densely punctured; sides sparsely ciliate, distinctly bordered; hind angles obtusely rounded; basal border widely interrupted at middle. Elytra strongly convex, distinctly widened backward; striae very wide, superficial but with well definite margins, slightly crenulate; interstices, at least on disc, with two regular rows of punctures near striae, smooth and subcariniform at middle, apically with extremely short sparse hairs. Hind tibiae superior apical spur shorter than first tarsal segment; latter as long as following three combined. Male: tubercles of frontal suture relatively stronger, central one obtusely raised; pronotum not narrowed frontward, relatively less coarsely and densely punctured; middle tibiae inferior apical spur truncate and hooked apically. Female: tubercles of frontal suture relatively weaker; pronotum distinctly narrowed frontward, relatively more coarsely and densely punctured; inferior apical spur of middle tibiae slender and acuminate apically.

DISTRIBUTION. Europe.

Genus *LINDBERGIANUS* Petrovitz, 1961 **stat. nov.**

Aphodius (*Lindbergianus*) Petrovitz, 1961c: 40

TYPE SPECIES: *Aphodius solitarius* Petrovitz, 1961 (monotypy).

DESCRIPTION. Small size species (length 3.5-5 mm), convex, subcylindrical, shiny, glabrous. Blackish, elytra faintly reddish apically. Head with epistome gibbous, punctured, anteriorly with feeble transverse arcuate carina; clypeus strongly sinuate at middle, denticulate at sides, thinly bordered, border not bristled; genae obtusely rounded, shortly ciliate, more protruding than eyes; latter small; frontal suture finely grooved, not tuberculate. Pronotum transverse, doubly and irregularly punctured; hind angles truncate; basal margin not bordered. Scutellum small, pentagonal with sides parallel toward base. Elytra not denticulate at shoulder; striae punctured, first as wide as second apically, not crenulate; interstices flat, nearly unpunctured. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side nearly smooth. Middle and hind tibiae rather broadened toward apex, with strong transverse carinae on outer face; apically fimbriate with spinules elongate and irregularly unequal. Pygidium with rather elongate setae on apical half. Pygidium with fine, somewhat sparse, moderately elongate, recumbent pubescence, mixed same more elongate straight setae toward apical margin; latter few densely and elongately ciliate. Sexual dimorphism shown in males by punctation on pronotum disc nearly lacking of larger punctures; fore tibiae apical spur downward bent apically. Aedeagus with rather elongate paramera, apically acuminate. Epipharynx shortly transverse; tormae elongate; anterior margin sinuate at middle; epitorma wide; corypha with two strong apical spiculae; chaetopariae stout; pedia pubescent, with several stout chaetae mixed.

DISTRIBUTION. Eastern Palearctic region.

Lindbergianus solitarius (Petrovitz, 1961) **n. comb.** (figs 569, 586-588)

Aphodius (*Lindbergianus*) *solitarius* Petrovitz, 1961c: 41

TYPE LOCALITY: Col de Sabzzaq, nordöstlich von Hérat [Afghanistan].

TYPE DEPOSITORY: Universitets Zoologiska Institute. Lund (holotype examined).

DESCRIPTION. Length 3.5-5 mm, convex, subcylindrical, shiny, glabrous. Blackish, elytra apically reddish. Head with epistome distinctly gibbous, anteriorly with feeble arcuate carina, punctured, punctation simple, rather coarse, regular, moderately denser and somewhat finer at centre, finely rugulose toward clypeal margin; clypeus distinctly sinuate at middle, denticulate at sides, quite thinly bordered, border glabrous; genae obtusely rounded, more protruding than eyes; frontal suture finely impressed, not at all tuberculate. Pronotum transverse, doubly punctured, smaller punctures very fine, regular and scattered throughout, larger ones sparse and placed on sides only; lateral margins regularly curved, sparsely and rather elongately ciliate, finely bordered till hind angles; latter truncate and feebly inward sinuate; base very finely bordered. Scutellum with some small punctures toward base. Elytra not denticulate at shoulder; striae fine, faintly crenulate; interstices nearly flat, very finely and sparsely punctured. Fore tibiae inferior carina feebly denticulate. Hind tibiae superior apical spur slightly longer than first tarsal segment; latter somewhat longer than following two combined. Abdominal sternites densely pubescent. Pygidium punctured and pubescent. Male: pronotum relatively more sparsely punctured, larger punctures lacking on disc; fore tibiae apical spur downward bent apically. Female: pronotum relatively more densely punctured, larger punctures evident around disc also; fore tibiae apical spur straight.

DISTRIBUTION. Afghanistan.

Genus *LIOTHORAX* Motschulsky, 1859

Liothorax Motschulsky, 1859a: 156; Ádám, 1994: 14

Aphodius (*Liothorax*), Bedel, 1911a: 74; G. Dellacasa, 1983: 276

Ataeniomorphus Balthasar, 1952c: 22; Stebnicka, 1990: 897 (as synonym of *Liothorax*)

TYPE SPECIES: *Scarabaeus plagiatus* Linné, 1767 (subsequent designation: G. Dellacasa, 1983).

DESCRIPTION. Rather small species (length 4-6 mm), elongate, convex, cylindrical, glabrous, generally shiny. Blackish or piceous-blackish, rarely with reddish spotted elytra or with elytra nearly quite reddish or yellowish; inferiorly blackish. Head with epistome moderately gibbous, punctured; clypeus either feebly or not at all sinuate at middle, rounded, angulate or subdenticulate at sides, entirely thinly bordered, border glabrous; genae rounded, sparsely ciliate, usually more protruding than eyes; latter rather small; frontal suture usually faint, exceptionally slightly raised laterally only. Pronotum moderately convex, doubly punctured; base not at all bordered or with border widely interrupted at middle, rarely with border extremely fine, nearly imperceptible. Scutellum small, pentagonal with sides parallel toward base. Elytra elongate, usually parallel-sided; striae distinct and generally crenulate; interstices flat, rarely convex, sparsely punctured. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side

smooth. Middle and hind tibiae with rather strong transverse carinae on outer face, apically fimbriate with spinules short and equal. Pygidium with short, rather dense, recumbent pubescence; its apical margin rather densely and somewhat elongately ciliate. Sexual dimorphism shown in males by more distinct epistomal gibbosity and by less dense punctation on pronotal disc. Aedeagus with elongate paramera, rounded and membranous apically. Epipharynx widely rounded at sides, more or less strongly sinuate at front margin; epitorma conical or subelliptical; corypha usually with short spiculae rounded apically; pedia with reduced prophobae and with several stout chaetae more or less regularly scattered; chaetopedia short, stout, rather sparse; apophobae sparse and more or less regularly scattered; apotormae faint.

DISTRIBUTION. Palearctic, Nearctic (?) and Oriental region.

REMARKS. Stebnicka (1990: 897) synonymized *Aphodius* (*Ataeniomorphus*) *isikdagensis* Balthasar, 1952 and *Aphodius* (*Ataeniomorphus*) *ressli* Petrovitz, 1962 with *Aphodius* (*Liothorax*) *plagiatus* (Linné, 1767) on the basis of type material study.

One of us (G. Dellacasa) had to examine the female holotype of *Aphodius ressl*i owing to the correct identification of *Liothorax* Cyprus specimens from Baudi collection (Ziani, 1997: 25).

Though we agree with Stebnicka in considering *Ataeniomorphus* junior synonym of *Liothorax*, in our opinion, *Aphodius ressl*i Petrovitz, 1962 is a good species because its significant discriminating characters from *Aphodius plagiatus*.

On the other hand we cannot ascertain the synonymy of *Aphodius ressl*i Petrovitz versus *Aphodius isikdagensis* Balthasar because, at present, the type of latter is not available for study.

Liothorax plagiatus (Linné, 1767) (figs 579, 589-591)

Scarabaeus plagiatus Linné, 1767: 559

Aphodius plagiatus; Erichson, 1848: 835

Liothorax plagiatus; Motschulsky, 1859a: 157; Ádám, 1994: 14

Aphodius (*Nialus*) *plagiatus*; Mulsant & Rey, 1870b (1869): 462; Reitter, 1892: 204; A. Schmidt, 1913: 168

Aphodius (*Liothorax*) *plagiatus*; Bedel, 1911a: 75; G. Dellacasa, 1983: 282

TYPE LOCALITY: Europa.

TYPE DEPOSITORY: probably Linnean Society collection. London (type not examined).

DESCRIPTION. Length 4-4.5 mm, elongate, subcylindrical, convex, glabrous; shiny, sometimes with metallic shine. Blackish; rarely with reddish spotted elytra and more rarely with latter nearly quite yellowish. Head rather large; epistome gibbous, regularly and densely punctured on disc, rugosely and coarsely punctured on sides; clypeus feebly sinuate at middle, rounded at sides; genae rounded, more protruding than eyes; frontal suture nearly faint. Pronotum moderately convex, doubly and irregularly punctured; sides thinly bordered; hind angles obtusely rounded; base usually with border widely interrupted at middle, rarely with border extremely fine, nearly imperceptible. Scutellum pentagonal, narrow, microreticulate, sparsely punctured. Elytra suboval; striae fine,

superficially punctured, not crenulate; interstices flat sparsely and superficially punctured. First segment of hind tarsi slightly widened apically, as long as superior apical spur of tibiae and longer than following three combined. Male: epistomal gibbosity relatively more distinct; pronotum more sparsely punctured on disc; metasternal plate concave and finely pubescent. Female: epistomal gibbosity relatively weaker; pronotum more densely punctured on disc; metasternal plate flat and glabrous.

DISTRIBUTION. Europe, Asia Minor, Syria, Russia, Siberia and China.

Genus *LOBOPARIUS* A. Schmidt, 1913

Aphodius (*Loboparius*) A. Schmidt, 1913: 123; Balthasar, 1964: 55; G. Dellacasa, 1983: 247
Loboparius; Paulian, 1942: 59

Aphodius (*Aphodius* Artengruppe *Loboparius*); Endrödi, 1960b: 193

Aphodius (Artengruppe *Loboparius*); Endrödi, 1964a: 260

Aphodius (group *Loboparius*); Endrödi & Rakovič, 1981: 51

TYPE SPECIES: *Aphodius globulus* Harold, 1859 (subsequent designation: Paulian, 1942).

DESCRIPTION. Small size species (length 4-5 mm), short, stout, strongly convex, glabrous or pubescent. Blackish or piceous, sometimes with elytra either reddish or rarely yellowish. Head with epistome gibbous, more or less coarsely and densely punctured; clypeus sinuate at middle, subdenticulate or rounded at sides, sometimes bisinuate angulate laterally, thickly bordered, border glabrous; genae usually auriculate, rarely aligned to clypeal margin, sparsely and elongately ciliate, generally more protruding than eyes; latter medium sized; frontal suture rather obsolete, sometimes with transverse gibbosities or with median conical tubercle. Pronotum strongly convex, usually glabrous, exceptionally with short pale hairs; generally with dense, strong, double punctation; strongly bordered at sides; base bordered or not and with a belt of coarse contiguous punctures. Scutellum small, triangular, elongate, apically acuminate. Elytra strongly convex, frequently globous, glabrous or more or less clothed with short and pale hairs; striae usually large and deep, feebly crenulate; interstices generally more or less distinctly convex. Fore tibiae distally tridentate and proximally faintly serrulate at outer margin; upper side with few large punctures. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with short and equal spinules and with apical spurs rather of same length. Pygidium basally with sparse, moderately elongate and recumbent pubescence, almost straightly pubescent toward apical margin; latter very elongately and rather densely ciliate. Sexual dimorphism shown in males by tubercles of frontal suture relatively more strong; by fore tibiae apical spur shorter and broader; by pronotum slightly more convex and not narrowed anteriorly. Aedeagus very small, with tegmen strongly sclerotized and paramera moderately elongate, frequently rounded apically. Epipharynx with enough rounded sides; epitorma very distinct and drop-shaped; corypha slender, strongly protruding beyond front margin and with several apical spiculae; chaetopodia with dense prophobae, mixed few elongate spines enough regularly arranged; chaetopariae strong and elongate; apophobae usually distinct.

DISTRIBUTION. Oriental and Eastern Palearctic region.

Loboparius globulus (Harold, 1859) (figs 580, 592-594)*Aphodius globulus* Harold, 1859: 207*Aphodius (Loboparius) globulus*; A. Schmidt, 1913: 123; Balthasar, 1964: 57*Loboparius globulus*; Paulian, 1942: 59

TYPE LOCALITY: Hong-Kong.

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (type examined).

DESCRIPTION. Length 4-5 mm, short, strongly convex, nearly dull. Quite brownish; sometimes elytra blackish, rarely brown-yellowish. Head with epistome feebly gibbous, distinctly microreticulate so rather opaque, with rather confuse and fine punctation; clypeus hardly sinuate at middle, largely rounded at sides; genae large, distinct, rounded, ciliate, not or slightly more protruding than eyes; frontal suture mutic, rather obsolete, signed by an unpunctured line only. Pronotum alutaceous, strongly convex, enough elongate, with double punctation enough regularly arranged; sides bordered, with long and sparse bristles; hind angles rounded; base with a belt of more or less coarse punctures arranged in a way to simulate a sort of large edge. Elytra short and convex; epipleura narrowly cariniform at shoulder; striae rather superficial, distinctly punctured and crenulate; interstices more or less convex, sparsely and irregularly punctured, alutaceous and with few pale apical hairs. Hind tibiae superior apical spur much shorter than first tarsal segment; latter nearly as long as following three combined. Male: fore tibiae apical spur relatively shorter and broader; frontal suture more distinct; pronotum less densely punctured on disc. Female: fore tibiae apical spur slender and acuminate; frontal suture obsolete; pronotum more densely punctured on disc.

DISTRIBUTION. South-eastern Palearctic and Oriental region.

Genus *LONGAPHODIUS* Endrödi, 1980 **stat. nov.***Aphodius* (group *Longaphodius*) Endrödi, 1980: 35*Aphodius (Longaphodius)*; M. Dellacasa, 1988a (1987): 339TYPE SPECIES: *Aphodius namaquarum* Endrödi, 1980 (original designation).

DESCRIPTION. Medium size species (length 5-6 mm), elongate, moderately convex, shiny, pubescent. More or less dark testaceous. Head distinctly narrowed frontward; epistome gibbous, punctured and with recumbent pubescence; clypeus sinuate at middle, rounded at sides, very thinly bordered, border elongately ciliate; genae obtusely rounded, elongately ciliate, more protruding than eyes; latter medium sized; frontal suture faintly impressed, not tuberculate; segments of antennal club elongate. Pronotum moderately transverse, punctured, pubescent; lateral margins rounded, finely bordered, border elongately ciliate; hind angles quite rounded; basal margin thinly bordered. Scutellum small, triangular, at base nearly as wide as first three elytral interstices. Elytra distinctly elongate, not denticulate at shoulder; striae punctured, first one apically as wide as second; interstices nearly flat. Fore tibiae flattened, distally tridentate and proximally serrulate at outer margin; upper side nearly smooth. Middle and hind tibiae with strong transverse carinae on outer face, their apical margin quite serrulate and fimbriate with spinules elongate and alternately unequal. Pygidium with fine, dense and moderately

elongate pubescence; its apical margin sparsely and very elongately ciliate. Sexual dimorphism shown in males by the shape of basal margin of pronotum regularly curved, in females it is obtusely angulate at middle and straight from here to hind angles. Aedeagus slender, bodiliform with tegmen very elongate and short paramera. Epipharynx transverse, deeply bisinuate at anterior margin; epitorma triangular; corypha protruding beyond front margin and without apical spiculae; chaetopariae very stout; pariae glabrous with anteriorly mixed some stout spines; tormae very elongate.

DISTRIBUTION. Southern Afrotropical region.

Longaphodius namaquarum (Endrödi, 1980) **n. comb.** (figs 581, 595-597)

Aphodius (group *Longaphodius*) *namaquarum* Endrödi, 1980: 36

Aphodius (*Longaphodius*) *namaquarum*; M. Dellacasa, 1988a (1987): 339

TYPE LOCALITY: Gemsbok vlatke farm, Namaq Coast, South Africa.

TYPE DEPOSITORY: Transvaal Museum. Pretoria (paratypes examined).

DESCRIPTION. Length 5-5.5 mm, elongate, moderately convex, shiny, pubescent, translucent: trough teguments are visible darker areas at fore margin of pronotum and at preapical declivity of elytra. Pale testaceous. Head with epistome distinctly gibbous, rather coarsely, simply, irregularly and sparsely punctured, central punctures not setigerous, punctation dense, subgranulose before frontal suture, few small punctures mixed and rather elongately setigerous, setae backward recumbent; clypeus distinctly sinuate at middle, rounded at sides; genae nearly obtusely angulate, elongately ciliate, more protruding than eyes. Pronotum faintly foveolate toward front angles, feebly transverse, subgranulosely punctured and shortly pubescent on disc, on sides punctation roughened, punctures more elongately setigerous; lateral margins thinly bordered and elongately ciliate; hind angles quite rounded; base thinly bordered. Scutellum punctured and pubescent on basal half. Elytra finely striate; striae superficially punctured, feebly crenulate; interstices flat on disc, slightly convex apically, roughly punctured, punctures setigerous, setae more elongate and more recumbent on lateral interstices; juxtasutural interstice apically sunk; epipleura elongately ciliate, cilia backward curved. Fore tibiae apical spur short, apically regularly acuminate. Fore tarsi stout. Middle and hind tibiae densely elongately pubescent. Hind tibiae superior apical spur as long as first tarsal segment; latter nearly as long as following two combined. Abdominal sternites and pygidium microreticulate, rather densely punctured, punctation roughened and setigerous. Male: basal margin of pronotum quite regularly curvate. Female: basal margin of pronotum obtusely angulate at middle and straight up to posterior angles.

DISTRIBUTION. Namaqualand (South Africa).

REMARKS. We had examined one couple of paratypes (male and female) of this taxon.

Genus *LORAPHODIUS* Reitter, 1892

Aphodius (*Loraphodius*) Reitter, 1892: 187; Balthasar, 1964: 373; G. Dellacasa, 1983: 283

Loraphodius; Paulian, 1942: 89; Ádám, 1994: 13

Aphodius (*Aphodius* Artengruppe *Loraphodius*); Endrödi, 1960b: 198

Aphodius (Artengruppe *Loraphodius*); Endrödi, 1964a: 198

TYPE SPECIES: *Aphodius suarius* Faldermann, 1836 (original designation).

DESCRIPTION. Medium size species (length 5-6 mm), elongate, convex, shiny, glabrous. Piceous or blackish, sometimes elytra reddish. Head with epistome gibbous and punctured; clypeus sinuate at middle, obtusely angulate at sides, quite thinly bordered, border laterally ciliate and anteriorly upturned; genae obtusely rounded, ciliate, more protruding than eyes; latter medium sized; frontal suture not or faintly tuberculate. Pronotum convex, doubly, more or less sparsely punctured; hind angles obliquely truncate; basal border distinct and crenulate. Scutellum small, narrow, triangularly elongate. Elytra moderately convex; striae deep and crenulate; interstices flat. Fore tibiae distally tridentate and proximally not serrulate at outer margin; upper side very sparsely and finely punctured. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with rather short and equal spinules. Sexual dimorphism shown in males by epistome relatively more gibbous; by frontal suture more distinct; by pronotum not narrowed frontward; by metasternal plate excavate and punctured. Aedeagus with elongate paramera strongly acuminate apically. Epipharynx distinctly bisinuate at anterior margin; epitorma drop-shaped; corypha distinctly protruding beyond front margin and with several apical spiculae; pedia with prophobae reduced and with many short chaetae irregularly mixed; chaetopariae rather short and dense; apophobae nearly regularly belted; apotormae distinct, slender and elongate.

DISTRIBUTION. Palearctic region.

Loraphodius suarius (Faldermann, 1835) (figs 582, 598-600)

Aphodius suarius Faldermann, 1835: 254

Aphodius (Loraphodius) suarius; Reitter, 1892: 188

Loraphodius suarius; Ádám, 1994: 13

TYPE LOCALITY: "Transcaucasia" (conventional).

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 5-6 mm, elongate, convex, shiny, glabrous. Piceous-blackish or chestnut-brown; head, pronotum and elytra with paler margins; sometimes elytra blackish too, or pronotum chestnut-brown and elytra blackish. Head with epistome distinctly gibbous, punctured; clypeus strongly sinuate at middle, angulate or subdenticulate at sides; genae obtusely rounded, ciliate, more protruding than eyes; frontal suture cariniform. Pronotum convex, subquadrate, shiny, doubly, finely and sparsely punctured, few lateral larger punctures mixed with many much smaller ones; sides rounded, elongately ciliate; hind angles obtusely truncate; basal border strong and crenulate. Scutellum elongate, rather narrow, irregularly and coarsely punctured. Elytra convex, oval; striae subcrenulate, deep, more strong apically; interstices nearly flat, finely and sparsely punctured. Hind tibiae superior apical spur as long as first tarsal segment; latter as long as following three combined. Male: epistome strongly gibbous, relatively more sparsely and superficially punctured; frontal suture slightly raised at middle; fore tibiae apical spur feebly hooked apically; metasternal plate deeply excavate and densely punctured. Female: epistome weakly gibbous, relatively more coarsely

punctured; frontal suture not raised at middle; fore tibiae apical spur slender and regularly acuminate apically; metasternal plate nearly flat and sparsely punctured.

DISTRIBUTION. Southern and Eastern Palearctic region.

Genus *LORASPIS* Mulsant & Rey, 1870

Aphodius (*Aphodius* groupe *Loraspis*) Mulsant & Rey, 1870b (1869): 418

Aphodius (*Loraspis*); A. Schmidt in Wytsman, 1910b: 29 (as synonym of *Aphodius* s. str.); G. Dellacasa, 1983: 285

Loraspis; Ádám, 1994: 13

TYPE SPECIES: *Scarabaeus sulcatus* Auctorum nec Fabricius, 1792; valid name: *Aphodius frater* Mulsant & Rey, 1870 (monotypy).

DESCRIPTION. Medium size species (length 5-6 mm), suboval, strongly convex, shiny, glabrous. Blackish, sometimes elytra reddish. Head with epistome strongly convex, coarsely punctured, frontward subrugose and with transverse, distinct carina; clypeus feebly sinuate at middle, rounded at sides quite thickly bordered, border glabrous; genae obtusely rounded, shortly ciliate, more protruding than eyes; latter medium sized; frontal suture trituberculate. Pronotum strongly convex, transverse, shiny, doubly punctured, bordered at front margin and at base. Scutellum small, triangular, distinctly grooved near lateral margins, carinate at middle. Elytra strongly convex, shiny; striae wide and deep, crenulate; interstices flat on disc, convex apically, sparsely and distinctly punctured. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side nearly smooth. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules short and equal. Pygidium rugosely and confusedly punctured, with sparse, fine and recumbent pubescence; its apical margin finely, rather sparsely and elongately ciliate. Sexual dimorphism shown in males mainly by presence of distinct impression at middle of front margin of pronotum. Aedeagus with elongate paramera, sinuate at sides, distinctly curved and acuminate apically. Epipharynx sinuate at front margin; epitorma conical; corypha protruding beyond front margin, bifid apically; pedia with few strong chaetae and elongately pubescent near front margin only; chaetopariae stout and elongate.

DISTRIBUTION. Palearctic region.

Loraspis frater (Mulsant & Rey, 1870) (figs 601, 605-607)

Aphodius frater Mulsant & Rey in Mulsant, 1870a : 203

Aphodius (*Loraspis*) *frater*; d'Orbigny, 1896a: 205 (as synonym of *sulcatus* Auctorum nec Fabricius, 1792); G. Dellacasa, 1983: 286

Aphodius sulcatus Auctorum nec Fabricius, 1792; Landin, 1956a: 210

Loraspis frater; Ádám, 1994: 13

TYPE LOCALITY: "Batoum" [Georgia].

TYPE DEPOSITORY: Reiche collection, Muséum national d'Histoire naturelle. Paris (type not examined).

DESCRIPTION. Length 5-6 mm, suboval, strongly convex, shiny, glabrous. Nearly quite blackish, clypeal margin and legs brownish; sometimes sides of pronotum shadowy

reddish and elytra reddish. Head with epistome coarsely punctured, punctation distally rugose, on disc with distinct transverse carina; clypeus feebly sinuate at middle, rounded at sides; genae obtusely rounded, more protruding than eyes; frontal suture trituberculate. Pronotum strongly convex, shiny, transverse, doubly punctured, punctures rather large, moderately dense, mixed with few larger ones, more dense on sides; latter rounded; hind angles obliquely truncate; front margin and base bordered. Scutellum rather small, dull and microreticulate, with two deep lateral grooves; at middle with longitudinal more or less raised carina. Elytra stout, strongly convex, shiny; striae wide, deep and distinctly crenulate; interstices nearly flat on disc, convex apically, sparsely but distinctly punctured. Hind tibiae superior apical spur longer than first tarsal segment; latter nearly as long as following three combined. Male: tubercles of frontal suture strong, central one often horn-shaped; pronotum with feeble but distinct impression at middle of front margin and relatively more sparsely punctured on disc. Female: tubercles of frontal suture relatively weaker; pronotum without impression at middle of front margin and relatively more densely punctured on disc.

DISTRIBUTION. Palearctic region.

Genus *LORDITOMAEUS* Péringuey, 1901

Lorditomaeus Péringuey, 1901: 436

TYPE SPECIES: *Aphodius deplanatus* Roth, 1851 nec *Aphodius deplanatus* Ménétrières, 1832; valid name: *Aphodius opatroides* Klug, 1855 (original designation).

DESCRIPTION. Rather small or medium size species (length 5-8 mm), broadly oval, feebly convex, upper side faintly depressed; sericeous, pubescent. Head and pronotum dark brownish; latter paler at margins; elytra usually more or less pale brown-yellowish, with or without blackish preapical spots. Head with epistome more or less distinctly gibbous, doubly punctured, larger punctures elongately setigerous; clypeus sinuate at middle, rounded at sides, quite thinly bordered, border feebly upturned anteriorly and very shortly bristled; genae obtusely rounded, elongately ciliate, usually more protruding than eyes; latter rather large; frontal suture grooved, not tuberculate. Pronotum widely transverse, explanate at sides; anterior margin with a belt of large punctures elongately setigerous; setae straightly erected; lateral margins rather shortly ciliate; hind angles as well as basal margin elongately ciliate; latter not bordered. Scutellum rather angustate, triangular, at base narrower than first two elytral interstices. Elytra not denticulate at shoulder, with eight unpunctured striae and a ninth, very fine, contiguous to epipleural plica; first stria as large as second apically; epipleura reaching elytral apex and elongately ciliate; interstices with one or several longitudinal rows of setigerous punctures. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side distinctly and regularly punctured. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules elongate and irregularly unequal. Pygidium with some straight sparse elongate setae. Sexual dimorphism shown in males by fore tibiae apical spur truncate and hooked apically. Aedeagus with elongate and nearly straight paramera. Epipharynx transverse; anterior margin distinctly sinuate at middle; acropariae elongate; epitorma more or less broadly conical; corypha with two

apical elongate spiculae; chaetopariae slender, elongate and densely arranged; pedia densely pubescent, some larger chaetae mixed.

DISTRIBUTION. Afrotropical region.

Lorditomaeus opatroides (Klug, 1855) (figs 602, 608-610)

Aphodius deplanatus Roth, 1851: 131 (nec *Aphodius deplanatus* Ménétriés, 1832)

Aphodius opatroides Klug, 1855: 656

Lorditomaeus deplanatus; Péringuey, 1901: 437

Lorditomaeus opatroides; A. Schmidt, 1922: 351

TYPE LOCALITY: "Abyssinia" [Ethiopia].

TYPE DEPOSITORY: Zoologische Staatssammlung. München (lectotype male, Landin des. *in litteris*, examined).

DESCRIPTION. Length 5.5-6.5 mm, broadly oval, feebly convex, sericeous, pubescent. Clypeus, lateral margins of pronotum and elytra dark testaceous; second, third, sixth and seventh elytral interstices yellowish. Head with epistome distinctly gibbous, finely regularly punctured but on sides with one or two larger punctures setigerous; front with coarse punctation, some larger punctures elongately setigerous; clypeus feebly sinuate at middle, widely rounded at sides, border feebly upturned anteriorly; genae obtusely rounded, elongately ciliate, more protruding than eyes; frontal suture grooved, not tuberculate. Pronotum widely transverse, explanate at sides; anterior margin provided with a belt of contiguous large punctures elongately bristled; lateral margins bordered, rather shortly ciliate, cilia backward curved; hind angles rounded and elongately ciliate; base not bordered, bristled; more elongate bristles at scutellum level and near hind angles. Scutellum, microreticulate, shortly bristled. Elytra with rather wide striae, feebly crenulate; interstices slightly convex, much finely punctured and shortly pubescent on disc, first seventh and eighth quite distinctly longer pubescent; pubescence biseriate on the seventh interstice; from third to sixth ones with the same kind of pubescence biseriate preapically; moreover the second interstice with some strong erected setae on apical third; epipleura shortly ciliate, cilia as long as those of pronotum lateral margins. Abdominal sternites finely pubescent, each one with a transverse belt of distinctly longer setae. Hind tibiae superior apical spur a bit shorter than first tarsal segment; latter rather longer than following three combined. Male: head relatively more transverse; epistome more finely punctured; fore tibiae apical spur truncate and hooked apically. Female: head relatively narrower; epistome more coarsely punctured; fore tibiae apical spur slender and apically acuminate.

DISTRIBUTION. Eastern Africa, Zaire, Cameroon, Senegal.

REMARKS. *Aphodius deplanatus* Roth, 1851 is primary homonym of *Aphodius deplanatus* Ménétriés, 1832 therefore, though the new combination in *Lorditomaeus*, the valid name to be applied to the taxon is *opatroides* Klug, 1855. Moreover, one of us (Bordat) studied the types of *Aphodius deplanatus* Roth, 1851 and of *Aphodius opatroides* Klug, 1855 and ascertained their synonymy.

Genus *LUNAPHODIUS* Balthasar, 1964 **stat. nov.**

Aphodius (*Lunaphodius*) Balthasar, 1964: 62; G. Dellacasa, 1993 (1992): 383

Aphodius (*Paramelinopterus*) Rakovič, 1984: 213 (**n. syn.**)

TYPE SPECIES: *Aphodius lunifer* Solsky, 1876 (original designation).

DESCRIPTION. Medium size species (length 6-8 mm), oblong-oval, moderately convex, shiny, nearly glabrous. Blackish, elytra yellowish with brownish suture or quite blackish with wide humeral spot and apex reddish. Head moderately convex; epistome feebly longitudinally gibbous, sparsely punctured; clypeus at middle deeply inward semicircularly or angulately sinuate, quite distinctly bordered, border laterally bristled; genae quite rounded, elongately ciliate, feebly more protruding than eyes; latter medium sized; frontal suture more or less distinct, not tuberculate. Pronotum transverse, sparsely punctured, somewhat depressed laterally, hind angles obtusely truncate; sides and base strongly bordered. Scutellum small, triangular. Elytra amygdaliform, widely flattened apically, epipleura wide; striae rather fine, not crenulate; interstices nearly flat, sparsely finely punctured, apically sparsely and shortly pubescent. Fore tibiae distally tridentate and proximally faintly serrulate at outer margin; upper side smooth. Middle and hind tibiae with rather strong transverse carinae on outer face, apically fimbriate with spinules elongate and irregularly unequal. Pygidium rather densely and very elongately pubescent; its apical margin finely, rather sparsely and very elongately ciliate. Sexual dimorphism shown in males mostly by the exceptionally different shape of head, fore tibiae and pronotum. Aedeagus very elongate, slender, digitiform; paramera very short, rounded apically. Epipharynx feebly sinuate at front margin, widely rounded at sides; epitorma drop-shaped; corypha protruding beyond front margin and with several stout, moderately elongate spiculae apically; pedia densely pubescent with several chaetae rather regularly scattered; chaetopariae dense and moderately elongate.

DISTRIBUTION. Central Asia.

REMARKS. Rakovič (1984) described the new subgenus *Paramelinopterus* and its new type species *Aphodius longipennis*. We had the opportunity to study two paratypes (male and female) of this taxon and we ascertained that the complex of its morpho-anatomical features allows to establish the new synonymy of *Paramelinopterus* versus *Lunaphodius*.

Lunaphodius lunifer (Solsky, 1876) **n. comb.** (figs 603, 611-613)

Aphodius lunifer Solsky in Fedtschenko, 1876: 336

Aphodius (*Melaphodius*) *lunifer*; Reitter, 1892: 238

Aphodius (*Melinopterus*) *lunifer*; d'Orbigny, 1896a: 236

Aphodius (*Cinacanthus*) *lunifer*; A. Schmidt, 1913: 121

Aphodius (*Lunaphodius*) *lunifer*; Balthasar, 1964: 63

TYPE LOCALITY: Taschkent [Turkestan].

TYPE DEPOSITORY: Zoologicheskij Muzej M. G. U. Moscow (type not examined).

DESCRIPTION. Length 6-8 mm, elongate oval, moderately convex, shiny, nearly glabrous. Blackish, pronotum shadowy reddish at sides; elytra yellowish with suture and epipleura brownish, sometimes with a cloudy darker discal spot; legs and antennae testaceous,

latter with blackish club. Head with clypeal border anteriorly rather upturned. Pronotum transverse, sparsely punctured; hind angles obtusely truncate; sides and bisinuate base strongly bordered. Elytra elongate, before apex widely flattened; striae fine and superficially punctured, not crenulate; interstices nearly flat, sparsely, finely, at sides somewhat more strongly and densely punctured, superficially microreticulate, apically faintly pubescent; epipleura wide, very distinct. Hind tibiae superior apical spur longer than first tarsal segment; latter as long as following two combined. Male: head flat, wide, frontward faintly narrowed; epistome finely and sparsely punctured, longitudinally gibbous at middle, strongly depressed frontward, distinctly carinate on lateral clypeal lobes; clypeus strongly semicircularly sinuate at middle, exceptionally protruding at sides, lateral lobes rounded apically; genae rounded, densely and elongately bristled, feebly more protruding than eyes; pronotum widely transverse, relatively less convex, not narrowed anteriorly, sparsely and finely punctured; fore tibiae apical spur stout and inserted nearly at middle of inner margin. Female: head relatively more convex, smaller, narrowed frontward; clypeus angulosely sinuate at middle, rounded at sides; epistome coarsely, densely, distally rugosely, punctured, longitudinally gibbous at middle, feebly depressed frontward, at sides weakly obliquely carinate; genae rounded, sparsely ciliate, not more protruding than eyes; pronotum relatively more convex, less transverse, less rounded at sides, narrowed frontward, more distinctly and densely punctured; fore tibiae apical spur slender, normally inserted toward apex at inner margin.

DISTRIBUTION. Central Asia.

Genus *MACRORETRUS* Péringuey, 1908

Macroretrus Péringuey, 1908: 632

TYPE SPECIES: *Macroretrus singularis* Péringuey, 1908 (monotypy).

DESCRIPTION. Small species (length 2.5-5 mm), stout, convex, shiny, glabrous. Blackish or dark brownish; elytra more or less diffusedly and confusedly reddish or brown-yellowish. Head with epistome feebly gibbous, punctured; clypeus faintly sinuate at middle, rounded at sides, thinly bordered, border shortly bristled; genae rounded, shortly ciliate, not more protruding than eyes; latter rather small; frontal suture distinct, not tuberculate. Pronotum transverse, doubly punctured; hind angles sinuate; anterior and basal margins not bordered. Scutellum rather large, nearly as long as one fifth of sutural margin of elytra, triangularly narrowed. Elytra rather broad, widely rounded apically, pygidium partially exposed; shoulder not denticulate; striae punctured, somewhat wider at apex, first stria as wide as second apically; interstices finely punctured. Fore tibiae distally tridentate and proximally not serrulate at outer margin; upper side finely and distinctly punctured. Middle and hind tibiae with feeble transverse carinae on outer face, apically fimbriate with spinules elongate and very irregularly unequal. Hind tarsi distinctly shorter than tibiae. Pygidium with many pale straight setae. Sexual dimorphism shown in males by less dense punctation of epistome and pronotum; by fore tibiae apical spur elongate, flattened and widened at distal third; by mesotarsal segments very large, their claws aberrantly shaped, strongly unequal, outer one more developed and distinctly

widened basally. Aedeagus with short paramera, apically acuminate. Epipharynx transverse; anterior margin nearly straight; epitorma drop-shaped, not reaching fore margin; corypha with some strong apical spiculae; chaetopariae rather slender; pedia pubescent with some antero-lateral stout chaetae mixed.

DISTRIBUTION. Afrotropical region.

Macroretrus singularis Péringuey, 1908 (figs 604, 618-620)

Macroretrus singularis Péringuey, 1908: 633

TYPE LOCALITY: "Sebakwe, Rhodesia" [Zimbabwe].

TYPE DEPOSITORY: South African Museum. Cape Town (lectotype male examined).

DESCRIPTION. Length 3.5-5 mm, stout, strongly convex, glabrous; shiny, elytra more or less distinctly microreticulate. Head, pronotum and scutellum brown-blackish, clypeal margin and fore angles of pronotum brown-yellowish, elytra yellow-brown with more or less wide discal spot; juxtasutural interstice and one basal macula on fifth interstice, sometimes on sixth too, brown-blackish. Head with epistome feebly gibbous, simply punctured, punctation nearly regular, fine and sparse; clypeus faintly sinuate at middle, rounded at sides; genae rounded, ciliate, not more protruding than eyes; frontal suture distinct, not tuberculate. Pronotum transverse, doubly punctured; smaller punctures as dense as and slightly finer than those on head, throughout scattered; large punctures, twice to five times larger than small punctures, irregular and rather dense, somewhat sparser on disc; laterally, large punctures even more larger; sides rounded and rather thickly bordered; hind angles rather strongly sinuate and bordered like lateral margins; base feebly bisinuate, not bordered. Scutellum microreticulate, faintly sunk on disc and with some punctures on basal half, at base nearly as wide as first three elytral interstices. Elytra strongly convex; not denticulate at shoulder, widened posteriorly; striae fine, feebly crenulate; interstices feebly convex, finely and sparsely punctured; epipleural plica widened at middle of lateral margin. Hind tibiae superior apical spur distinctly shorter than first tarsal segment; latter longer than following three combined. Male: epistome and pronotum less densely punctured; fore tibiae apical spur elongate, flattened and widened at distal third; segments of middle tarsi very large, first three inferiorly denticulate; claws aberrantly shaped, strongly unequal, outer one more developed and widened basally; first segment of hind tarsi inferiorly denticulate. Female: epistome and pronotum relatively more densely and coarsely punctured; fore tibiae apical spur, segments of middle and hind tarsi and claws of middle tarsi normally shaped.

DISTRIBUTION. Zimbabwe, Angola and Malawi

REMARKS. The **lectotype male, herein designated** bears the following labels:

- 1) white, printed: Rhodesia Sebakwe;
- 2) white, handwritten by Péringuey: *Macroretrus singularis* typ. PY.
- 3) red, without any inscription;
- 4) red, Type SAM/Ent (printed), 5128 (handwritten);
- 5) red, handwritten: *Macroretrus singularis* Péringuey, 1908, Lectotype male, P. Bordat & G. Dellacasa des. 1996.

Genus *MECYNODES* Mulsant & Rey, 1870 **stat. nov.**

Aphodius (*Aphodius* division *Mecynodes*) Mulsant & Rey, 1870b (1869): 465.

Aphodius (*Mecynodes*); Mulsant & Rey, 1871 (1870): 474; G. Dellacasa, 1983: 289.

Aphodius (*Esimaphodius*) Reitter, 1892: 208; d'Orbigny, 1896a: 215 (as synonym of *Erytus*).

Aphodius (*Mecynodes*); Reitter, 1892: 210 (as synonym of *Orodalus*).

Aphodius (*Meraphodius*) D. Koshantschikov, 1894: 112; A. Schmidt in Wytsman, 1910b: 46 (as synonym of *Esimaphodius*).

TYPE SPECIES: *Aphodius parallelus* Mulsant, 1843 (junior synonym of *Aphodius striatulus* Waltl, 1835) (monotypy).

DESCRIPTION. Small size species (length 2-4 mm), strongly elongate, cylindrical, moderately shiny, glabrous. Blackish, rarely quite testaceous; elytra sometimes yellowish spotted or quite yellowish with blackish suture. Head narrowed anteriorly with epistome moderately convex, punctured; clypeus strongly sinuate at middle, angulate or subdentate at sides, quite distinctly bordered, border laterally ciliate and anteriorly feebly upturned; genae usually small, ciliate, barely more protruding than eyes; latter medium sized; frontal suture not tuberculate. Pronotum convex, punctured; hind angles rounded; base thinly bordered. Scutellum small, pentagonal, elongate, apically acuminate. Elytra elongate, parallel-sided, moderately convex; striae generally fine, crenulate; interstices nearly flat, punctured. Tibiae slender; tarsal segments distinctly elongate. Fore tibiae distally tridentate and proximally faintly serrulate at outer margin; upper side smooth. Middle and hind tibiae with rather strong transverse carinae on outer face, apically fimbriate with spinules elongate and irregularly unequal. Pygidium subrugosely punctured, with sparse, rather elongate and recumbent pubescence; its apical margin sparsely and elongately ciliate. Sexual dimorphism shown in males mainly by clypeal margin angulate or subdentate at sides. Aedeagus with tegment rather short and rounded; paramera elongate. Epipharynx distinctly sinuate at front margin, rounded at sides; epitorma chalice-shaped; corypha with very elongate apical spiculae; pedia with densely pubescent prophobae, mixed few elongate chaetae nearly serially arranged; chaetopariae rather slender and dense; apophobae and apotormae nearly faint.

DISTRIBUTION. Palearctic region.

REMARKS. The subgenus *Meraphodius* was created by D. Koshantschikov (1894: 112) with *Aphodius kisilkumi* Solsky, 1876 as type species by original designation. The subgenus *Esimaphodius* was created by Reitter (1892: 208) with *Aphodius leucopterus* Klug, 1845 as type species by original designation.

Both type species of said subgenera were rightly considered (e.g.: Balthasar, 1964: 328, 330) pertaining to subgenus *Mecynodes* Mulsant & Rey, 1870 thus, obviously, *Meraphodius* and *Esimaphodius* had to be considered junior synonyms of the former.

Mecynodes striatulus (Waltl, 1835) **n. comb.** (figs 614, 621-623)

Aphodius striatulus Waltl, 1835: 67.

Aphodius (*Orodalus*) *striatulus*; A. Schmidt in Wytsman, 1910b: 50.

Aphodius (*Mecynodes*) *striatulus*; A. Schmidt, 1913: 155.

TYPE LOCALITY: "Spanien" [Spain].

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 2.5-4 mm, strongly elongate, cylindrical, sericeous, glabrous. Blackish; sometimes elytra either with yellowish, more or less widened discal spot or quite yellow with blackish suture. Head with epistome gibbous, distinctly, regularly and rather sparsely punctured; clypeus strongly sinuate at middle, angulate or subdenticulate at sides; genae rounded, barely more protruding than eyes; frontal suture nearly faint. Pronotum moderately convex, distinctly rather irregularly and sparsely punctured, punctures denser on sides; latter rounded as well as hind angles; base thinly but distinctly bordered. Scutellum elongate, narrow, basally parallel-sided, apically acuminate, microreticulate and sparsely punctured. Elytra elongate, parallel-sided, feebly convex; striae fine, superficial, crenulate; interstices flat, more or less strongly microreticulate, distinctly, sparsely and irregularly punctured. Hind tibiae superior apical spur slightly shorter than first tarsal segment; latter nearly as long as following three combined. Male: clypeus angulate at sides; epistome faintly gibbous; frontal suture nearly obsolete; metasternal plate concave. Female: clypeus subdenticulate at sides; epistome distinctly gibbous; frontal suture rather distinctly impressed; metasternal plate flat.

DISTRIBUTION. South-western Palearctic region.

Genus *MEGATELOIDES* Landin, 1974 **stat. nov.**

Colobopterus (*Megateloides*) Landin, 1974: 235.

Colobopterus (group *Megateloides*); Endrödi & Rakovič, 1981: 35.

Aphodius (*Megateloides*); G. Dellacasa, 1986: 181.

TYPE SPECIES: *Aphodius dimidiatus* Roth, 1851 (original designation).

DESCRIPTION. Small size species (length 3-4 mm), subcylindrical, shiny, glabrous. Blackish, elytra either blackish with shoulder and apex more or less widely reddish or testaceous with lateral blackish spot at middle. Head shiny, with epistome moderately gibbous, punctured; clypeus anteriorly truncate, angularly bisinuate at each side, thinly bordered, border laterally ciliate and distally upturned; genae acuminate, sparsely ciliate, not more protruding than eyes; latter medium sized; frontal suture trituberculate, median tubercle strong and conical. Pronotum subquadrate, strongly convex; either regularly or irregularly doubly punctured; base not bordered. Scutellum large, convex, triangularly elongate. Elytra barely longer than pronotum, rounded apically; striae crenulate or not; interstices flat or moderately convex, more or less densely punctured. Fore tibiae distally tridentate and proximally strongly serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face, apically frimbriate with short and equal spinules. Pygidium rather densely and coarsely punctured; punctures elongately setigerous. Sexual dimorphism shown in males by tubercles of frontal suture relatively stronger and by fore tibiae apical spur shorter and rounded apically. Aedeagus short, stout and strongly sclerotized; paramera more or less rounded apically. Epipharynx rather transverse; epitorma drop-shaped; corypha with two elongate apical spiculae strongly more protruding than front margin; chaetopariae with short, moderately dense and rather stout chaetae.

DISTRIBUTION. Afrotropical and Oriental region.

Megateloides dimidiatus (Roth, 1851) **n. comb.** (figs 615, 624-626)*Aphodius dimidiatus* Roth, 1851: 133.*Aphodius* (*Megatelus*) *dimidiatus*; Reitter, 1892: 180; Balthasar, 1964: 29.*Megatelus dimidiatus*; Paulian, 1942: 20.*Colobopteris* (Artengruppe *Megatelus*) *dimidiatus*; Endrödi, 1964a: 31.*Colobopteris* (*Megateloides*) *dimidiatus*; Landin, 1974: 235.*Aphodius* (*Megateloides*) *dimidiatus*; G. Dellacasa, 1986: 182.

TYPE LOCALITY: "Abyssinien" [Ethiopia].

TYPE DEPOSITORY: Zoologische Staatssammlung. München (type not examined).

DESCRIPTION. Length 3-4 mm, short, subcylindrical, shiny, glabrous. Blackish, clypeal margin and pronotum sides faintly reddish; elytra with shoulder and apical third reddish. Head shiny, epistome moderately gibbous and nearly regularly punctured; clypeus anteriorly truncate, laterally angularly bisinuate; genae angulate, frontward directed, not more protruding than eyes; frontal suture trituberculate. Pronotum convex, with double, rather dense and irregularly sparse punctation; sides feebly rounded and very finely bordered; hind angles broadly rounded; base without border, at most with extremely fine vestiges of border laterally. Scutellum flat, broad, irregularly punctured. Elytra short, convex, shiny; striae rather narrow, feebly but distinctly crenulate; interstice moderately convex, finely and sparsely punctured, nearly imperceptibly pubescent apically. Hind tibiae superior apical spur shorter than first tarsal segment; latter as long as following three combined. Male: tubercles of frontal suture relatively more distinct, the median stronger; fore tibiae apical spur stout and rounded apically. Female: tubercles of frontal suture weaker; fore tibiae apical spur slender and acuminate apically.

DISTRIBUTION. Ethiopia, Nigeria, Cameroon, Transvaal, Zambia, Zimbabwe and probably more widely distributed within Afrotropical region too.

Genus *MEGATELUS* Reitter, 1892*Aphodius* (*Megatelus*) Reitter, 1892: 179, Balthasar, 1964: 27; G. Dellacasa, 1986: 184.*Megatelus*; Paulian, 1942: 18.*Aphodius* (*Colobopteris* Artengruppe *Megatelus*); Endrödi, 1960b: 89;*Colobopteris* (Artengruppe *Megatelus*); Endrödi, 1964a: 29.*Colobopteris* (*Megatelus*); Landin, 1974: 236.

TYPE SPECIES: *Aphodius scolytiformis* Reitter, 1892 (junior synonym of *Aphodius brahminus* Harold, 1879 *apud* A. Schmidt, 1913) (subsequent designation: Paulian, 1942).

DESCRIPTION. Small size species (length 3-5 mm), short, stout, strongly convex, shiny, elytra with apical third pubescent. Blackish; elytra more or less widely reddish apically, sometimes pale yellow with shoulder reddish and with lateral spot blackish. Head with epistome moderately gibbous, more or less densely punctured; clypeus sinuate at middle, rounded at sides, entirely thickly bordered, border shortly bristled and distally upturned; genae subauriculate, very shortly ciliate, more protruding than eyes; latter rather small; frontal suture trituberculate, median tubercle transverse, cariniform and obtusely bifid at tip. Pronotum sparsely and doubly punctured, very transverse, bordered

or not at base. Scutellum very large, as long as one third of sutural margin of elytra, broadly triangular, not sunk. Elytra nearly as long as pronotum only, distinctly pubescent in their apical third; striae moderately impressed and usually feebly crenulate; interstices flat or feebly convex. Fore tibiae quadridentate and not serrulate at outer margin, upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with short and equal spinules. Pygidium coarsely punctured, nearly glabrous. Sexual dimorphism shown in males by more raised frontal tubercles; by pronotum not narrowed at front margin; by fore tibiae usually with stronger teeth at outer margin. Aedeagus small, short, stout, with paramera rounded apically. Epipharynx broadly transverse and widely curved at sides; epitorma conical; corypha feebly more protruding than front margin and with rather short apical spiculae; chaetopariae dense, moderately elongate and rather strong; chaetopodia densely pubescent, fine hairs mixed, with transverse belt of strong short spines.

DISTRIBUTION. Palearctic, Oriental and Afrotropical region.

Megatelus brahminus (Harold, 1879) **n. comb.** (figs 616, 627-629)

Aphodius brahminus Harold, 1879: 227.

Aphodius (Megatelus) scolytiformis Reitter, 1892: 179; A. Schmidt, 1913: 118 (as synonym of *brahminus*)

Aphodius (Megatelus) brahminus; A. Schmidt, 1913: 118, G. Dellacasa, 1986: 186.

Megatelus scolytiformis; Paulian, 1942: 18.

Colobopterus (Megatelus) scolytiformis; Landin, 1974: 236.

TYPE LOCALITY: "Birmà" [Burma].

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (type examined).

DESCRIPTION. Length 4-5 mm, shortly oval, convex, shiny, elytral apical third pubescent. Blackish; elytra with a triangular reddish spot widened from scutellum to apex; sometimes elytra blackish with a round small pale-reddish spot on shoulder and another one narrowly elongate from scutellum till apex and there more or less widened. Head with epistome moderately convex, rather finely and sparsely but regularly punctured; clypeus feebly sinuate at middle, rounded at sides; genae small, subauriculate, barely more protruding than eyes; frontal suture laterally carinate. Pronotum large, strongly convex, shiny, with double, sparse punctation; sides bordered, distinctly sinuate before hind angles; latter widely rounded; base without border but with a belt of short dense hairs. Scutellum wide, with few distinct punctures rather small. Elytra shiny, convex, very short, nearly as long as pronotum only; striae not crenulate, basally distinctly impressed and punctured, apically almost faint; interstices moderately convex, with very fine sparse punctation at base, more densely and coarsely punctured at apex. Hind tibiae superior apical spur shorter than first tarsal segment; latter as long as following three combined. Male: frontal suture with a median, strongly raised lamina, apically bifid; front with a deep central impression; pronotum relatively broader and very sparsely punctured, Female: frontal suture distinctly carinate, more raised at middle; pronotum narrowed anteriorly and with relatively denser and coarser punctation.

DISTRIBUTION. Thailand, Laos, Cambodia and Burma.

Genus *MELINOPTERUS* Mulsant, 1842

Melinopterus Mulsant, 1842: 282; Ádám, 1994: 14.

Aphodius (*Melinopterus* section *Melinopterus*); Mulsant & Rey, 1870b (1869): 568.

Aphodius (*Melinopterus*); Mulsant & Rey, 1871 (1870): 474; Reitter, 1892: 232; G. Dellacasa, 1983: 296.

TYPE SPECIES: *Scarabaeus prodromus* Brahm, 1790 (subsequent designation: Reitter, 1892).

DESCRIPTION. Small or medium size species (length 4-8 mm), elongate, moderately convex, rather shiny, with elytra more or less widely pubescent. Blackish; head sometimes anteriorly, sides and sometimes base of pronotum testaceous; elytra yellowish with cloudy discal spot brownish, seldom elytra quite blackish. Head with epistome moderately gibbous, punctured; clypeus truncate or faintly sinuate at middle, rounded at sides, thickly bordered, border glabrous; genae distinct, elongately ciliate, more protruding than eyes; latter medium sized; frontal suture sometimes obsolete or nearly faint, rarely more or less distinctly tuberculate. Pronotum shiny, more or less densely punctured; base bordered, rarely without border. Scutellum small, triangular, basally punctured. Elytra moderately convex, feebly widened posteriorly; striae deep, crenulate; interstices feebly convex, often densely and distinctly pubescent. Fore tibiae distally tridentate and proximally feebly serrulate at outer margin; upper side faintly punctured. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with spinules elongate and irregularly unequal. Pygidium with fine, dense and recumbent pubescence, mixed few straight elongate setae; its apical margin with many, fine and very elongate cilia. Sexual dimorphism shown in males by more widened head; by less convex and more widened pronotum; by elytra more densely and elongately pubescent. Aedeagus usually slender and elongate, with paramera membranous apically. Epipharynx rounded at sides, more or less distinctly sinuate at anterior margin; epitorma generally conical; corypha with elongate apical spiculae; pedia pubescent with several spines sparsely scattered; chaetopariae slender, dense and moderately elongate.

DISTRIBUTION. Holarctic region.

Melinopterus prodromus (Brahm, 1790) (figs 617, 630-632)

Scarabaeus prodromus Brahm, 1790: 3.

Melinopterus prodromus; Mulsant, 1842: 283; Ádám, 1994: 14.

Aphodius prodromus; Erichson, 1848: 871.

Aphodius (*Melinopterus*) *prodromus*; Mulsant & Rey, 1871 (1870): 473.

TYPE LOCALITY: Mainz [Germany] (conventional).

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 4.5-7.5 mm, oblong, feebly convex, moderately shiny, pubescent. Head and pronotum shiny black, latter with sides more or less widely yellowish, yellow bind interrupted at middle by small blackish spot; scutellum blackish; elytra dirty yellowish with blackish suture and with a large cloudy spot brownish; sometimes yellowish margins of pronotum very narrowed, rarely only frontal angles testaceous; or, elytra quite dirty yellowish, or with cloudy discal spot reduced to a longitudinal stripe,

or including a yellowish transverse small preapical spot, or widened backward in a way that only a basal transverse band and the first interstice are yet yellowish; sometimes clypeus more or less widely testaceous or widely and shadowy paler yellowish and lateral yellow margins of pronotum wider and elytra quite dirty yellowish. Head with epistome nearly flat, finely irregularly sparsely punctured; clypeus subtruncate, rounded at sides; genae obliquely truncate, angulate, strongly more protruding than eyes; frontal suture obsolete. Pronotum doubly punctured, very small punctures mixed with larger ones irregularly scattered; hind angles obtuse; sides and base thinly bordered, sometimes basal border extremely thin at middle. Scutellum with few small punctures at base. Elytra with striae deep, distinctly crenulate; interstices flat or feebly convex, with sparse punctation near base, more densely coarsely punctured apically, more or less widely pubescent backward. Hind tibiae superior apical spur shorter than first tarsal segment; latter longer than following two combined. Male: head wide, nearly semihexagonal; fore tibiae apical spur truncate and obtusely inward hooked apically; pronotum strongly transverse, very feebly convex, unpunctured on disc; elytra relatively parallel-sided and more diffusedly pubescent with interstices feebly convex; metasternal plate flattened near sides with deep median longitudinal groove, glabrous and nearly smooth at middle, punctured and shortly pubescent laterally. Female: fore tibiae apical spur slender and acuminate apically; pronotum narrowed frontward, relatively more convex, with almost regular punctation; elytra oval-elongate, only apically shortly pubescent, interstices flat; metasternal plate glabrous, very sparsely punctured, with median longitudinal groove relatively less deep.

DISTRIBUTION. Holarctic region.

Genus *MENDIDAPHODIUS* Reitter, 1901

Aphodius (*Mendidaphodius*) Reitter, 1901: 73; A. Schmidt, 1913: 128; Balthasar, 1964: 99; M. Dellacasa, 1988a (1987): 161.

Mendidaphodius; Paulian, 1942: 41.

Aphodius (*Aphodius* Artengruppe *Mendidaphodius*); Endrödi, 1960b: 117.

Aphodius (Artengruppe *Mendidaphodius*); Endrödi, 1964a: 97.

Aphodius (group *Mendidaphodius*); Endrödi & Rakovič, 1981: 41.

TYPE SPECIES: *Aphodius spinifrontis* Reitter, 1901 (monotypy).

DESCRIPTION. Small size species (length 3-5 mm), cylindrical, elongate, shiny, glabrous. Brownish or blackish; often clypeal margin and pronotum sides shadowy reddish; sometimes elytra reddish or yellowish with brownish suture or also with lateral and apical margins darkened. Head with epistome feebly gibbous, either quite irregularly punctured or rugose or subrugose, sometimes rugose on disc and granulose distally; clypeus sinuate or truncate at middle, either denticulate or acutely angulose at sides, bisinuate or not laterally before genae, usually thinly bordered, border rather elongately bristled; genae rounded, sparsely ciliate, more or less strongly more protruding than eyes; latter medium sized; frontal suture finely impressed, not tuberculate. Pronotum transverse, convex, feebly rounded at sides, doubly, coarsely but rather sparsely punctured; lateral margin bordered, border glabrous or rather shortly ciliate; base thinly

bordered, sometimes border faint at middle. Scutellum small, pentagonal with sides parallel toward base. Elytra very elongate, sometimes slightly flattened on disc, not denticulate at shoulder, rather finely striate; striae almost superficially punctured, not or feebly crenulate; interstices flat or moderately convex, sparsely and nearly imperceptibly punctured. Fore tibiae distally strongly denticulate and proximally usually strongly serrulate at outer margin; upper side nearly smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with irregularly unequal elongate spinules or with spinules short and equal. Sexual dimorphism shown in males by epistome relatively less coarsely punctured or less strongly rugose; by fore tibiae apical spur more elongate; by metasternal plate longitudinally grooved. Aedeagus rather stout with paramera variously shaped; sometimes almost elongate and rounded apically. Epipharynx feebly sinuate at anterior margin; epitorma broadly conical; corypha with six strong apical spiculae, the median two more elongate and frontwardly prominent; pedia densely pubescent, mixed several stout spines usually subserially arranged; chaetopariae stout, elongate and rather dense.

DISTRIBUTION. Palearctic and Afrotropical region.

REMARKS. Reitter (1901) created the subgenus *Mendidaphodius* for the new species *spinifrontis* only, separating it from the close genus-group *Mendidius* by punctuation of epistome rugose instead of granulose; by base of pronotum not bordered²⁰; by scutellum pentagonal with parallel sides toward base; by elytra not denticulate at shoulder; by hind tibiae apically fimbriate with spinules strongly unequal.

A. Schmidt (1913) modified the generic diagnosis adding several morphological features (e.g.: base of pronotum bordered; scutellum triangular; elytra denticulate at shoulder) thus considered pertaining to *Mendidaphodius* ten other species from Afrotropical, Nearctic and Palearctic region.

Moreover, as already remarked in the key to genera, effectively the taxa pertaining to this apparently unhomogeneous genus may have the middle and hind tibiae either apically fimbriate with elongate and unequal spinules or with spinules short and equal. This represents a typical case in which a character usually considered of generic value has to be downgraded to specific value.

Important enough, it must be remarked that other Palearctic taxa (especially those of *linearis* group) badly need thorough systematic revision and/or nomenclatural redefinition.

Mendidaphodius spinifrontis (Reitter, 1901) (figs 633, 634)

Aphodius (*Mendidaphodius*) *spinifrontis* Reitter, 1901: 73; A. Schmidt, 1922: 83.

Mendidaphodius spinifrontis; Paulian, 1942: 41.

TYPE LOCALITY: Indersk [= Inderskoje See; = Ozero Inder; Kazakhstan].

TYPE DEPOSITORY: Naturhistoriska Riksmuseet. Stockholm (lectotype female examined).

DESCRIPTION. Length 4.5 mm; elongate, cylindrical, shiny, glabrous. Brownish; clypeal margin and pronotum sides shadowy reddish; elytra yellowish with brownish suture;

²⁰ Otherwise the type specimen of *spinifrontis* has the base of pronotum thinly but distinctly bordered.

legs testaceous; antennal club yellowish. Head with epistome feebly gibbous, coarsely and regularly punctured toward frontal suture, subrugose on disc and distally rugose; clypeus subtruncate at middle, acutely denticulate at sides, denticles strongly upturned, faintly bordered but margin elongately and sparsely bristled, not at all sinuate laterally before genae; latter widely rounded, sparsely and rather elongately ciliate, slightly more protruding than eyes; frontal suture distinctly impressed, somewhat raised laterally, not tuberculate; front sparsely and irregularly punctured. Pronotum transverse, convex, doubly and rather sparsely punctured; large punctures, five to six times larger than small punctures, sparser on disc; sides feebly rounded, thinly bordered, border sparsely and rather shortly ciliate; hind angles obtusely rounded; base not sinuate, thinly but distinctly bordered. Scutellum somewhat depressed at middle and with few, large and irregular punctures on basal half. Elytra very elongate; striae fine, rather superficially punctured, subcrenulate; interstices superficially and very finely microreticulate, nearly flat, finely and sparsely but distinctly punctured, punctation more distinct laterally and toward apex. Pygidium with moderately elongate pubescence throughout sparse; apical margin with few straight and strongly elongate setae. Fore tibiae with distal teeth elongate, rather slender and strongly acuminate, proximally with several denticles at outer margin. Middle and hind tibiae with one distinct more strongly elongate apical spinula, as long as first tarsal segment, emerging among others near the outer angle of upper apical margin. Hind tibiae superior apical spur as long as first tarsal segment; latter slightly shorter than following two combined. Male unknown.

DISTRIBUTION. The species is so far known from type locality only.

REMARKS. We had the opportunity to study only the female specimen, preserved in A. Schmidt collection at Naturhistoriska Riksmuseet, **herein designated lectotype**, bearing the following labels:

- 1) white, handwritten by Reitter: *Mendidaphodius spinifrontis m.*, 1900;
- 2) white, printed: 118;
- 3) red, handwritten: *Mendidaphodius spinifrontis* Reitter, 1901, lectotypus, P. Bordat & G. Dellacasa des. 1998.

This specimen, lacking of locality label, is surely the single example [“ein Stück mit Doubletten des Hrn. Dr Sievers aus St. Petersburg mit dem Patriazettel: Indersk”] utilized by Reitter for the original description of the taxon due to doubtless autograph identification label.

Genus *MENDIDIUS* Harold, 1868.

Cnemargus Harold, 1866: 123 (nec *Cnemargus* Motschulsky, 1845).

Mendidius Harold, 1868b: 86 (*nomen novum*).

Aphodius (*Mendidius*); Reitter, 1892: 180; G. Dellacasa, 1992: 119.

Aphodosugrames; Endrödi, 1964b: 424; M. Dellacasa, 1988a (1987): 294 (as synonym of *Mendidius*).

TYPE SPECIES: *Aphodius fimbriolatus* Mannerheim, 1849 (subsequent designation: Reitter, 1892).

DESCRIPTION. Small or medium size species (length 3-8 mm), moderately elongate,

convex, shiny, rather glabrous. Testaceous to blackish, elytra sometimes paler, rarely either completely reddish or blackish. Head with epistome gibbous, strongly granulate or rugose; sometimes tuberculate and granula sometimes setigerous; clypeus sinuate at middle, denticulate, angulate or rarely rounded at sides, thickly bordered, border upturned and ciliate laterally; genae rounded, elongately ciliate, more protruding than eyes; latter rather large; frontal suture cariniform, more or less strongly tuberculate. Pronotum transverse, punctured, rounded at sides, sometimes bordered at front margin and always at base. Scutellum small, triangular, punctured. Elytra elongate, feebly widened posteriorly; striae fine, deep, more or less distinctly crenulate; interstices flat or nearly flat, punctured. Fore tibiae distally tridentate and proximally strongly serrulate at outer margin; upper side nearly smooth. Middle tibiae distinctly widened apically with apical spurs short and stout. Hind femurs compress and widened. Hind tibiae moderately widened apically, strongly transversely carinate on outer face; apically fimbriate with spinules extremely short and equal. Hind tarsi short or moderately elongate. Claws slender, corneous. Pygidium elongately and rather sparsely pubescent. Sexual dimorphism shown in males by more strong tubercles of frontal carina; by fore tibiae spur apically obtuse; by more transverse and less densely punctured pronotum. Aedeagus with paramera membranous and rounded apically, more or less distinctly downward curved and with one acuminate ventral apophysis. Epipharynx rounded at sides, feebly sinuate and distinctly pubescent at front margin; epitorma broadly conical; corypha with stout apical protruding spiculae; chaetopodia densely pubescent near apex of epitorma and with several short spines more or less regularly arranged; chaetopariae moderately dense and moderately elongate.

DISTRIBUTION. Palearctic, Oriental, Afrotropical (?) and Nearctic (?) region.

REMARKS. The genus *Aphodosugrames* was created by Endrödi (1964b: 424) with *Aphodosugrames gobiensis* n. sp. (Cagan Elis, Ostgobi Aimak, Mongolia), type species by monotypy.

One of us (G. Dellacasa) had the opportunity to study some paratypes of said species and ascertained that the taxon surely pertains to genus *Mendidius*, therefore *Aphodosugrames* has to be considered junior synonym of latter as already stated by M. Dellacasa (1988a: 294).

Mendidius fimbriolatus (Mannerheim 1849) **n. comb.** (figs 635, 638-640)

Aphodius fimbriolatus Mannerheim, 1849: 235.

Cnemargus fimbriolatus; Harold, 1866: 124.

Aphodius (Mendidius) fimbriolatus; Reitter, 1892: 182.

TYPE LOCALITY: Irkutsk [Siberia].

TYPE DEPOSITORY: Universitets Zoologiska Muzeum. Helsinki (lectotype female examined).

DESCRIPTION. Length 5 mm, moderately elongate, convex, shiny, rather glabrous. Piceous, elytra testaceous, suture brownish; legs and antennae brownish, latter with darker club. Head shiny; epistome strongly gibbous, irregularly granulate, with sparse elongate hairs; clypeus moderately sinuate at middle, with distinct upturned small tooth

at sides; latter distinctly bordered and elongately bristled, border feebly upturned; genae rounded, somewhat depressed, more protruding than eyes, with elongate yellowish cilia; frontal suture cariniform, with three weak tubercles; front coarsely, irregularly punctured. Pronotum convex, shiny, rather densely and regularly punctured; front margin distinctly bordered; sides rounded and elongately bristled; hind angles rounded; base distinctly bordered. Scutellum curved at sides, distinctly punctured. Elytra elongate, feebly widened posteriorly; striae rather deep, distinctly punctured, feebly crenulate; interstices nearly flat, with lateral irregular rows of fine punctures, apically with short and sparse hairs. Superior apical spur of hind tibiae stout, slightly flattened, nearly as long as inferior one and distinctly longer than first tarsal segment; latter rather short and stout, as long as following two combined. Male: shape relatively more elongate; tubercles of frontal suture more distinct; pronotum more convex with slightly more sparse punctation on disc; metasternal plate more distinctly grooved; fore tibiae apical spur parallel-sided and rather obtusely rounded apically. Female: shape a little more oval; tubercles of frontal suture relatively weaker; pronotum less convex and with punctation more densely and regularly scattered throughout; metasternal plate superficially grooved; fore tibiae apical spur regularly acuminate toward apex.

DISTRIBUTION. Central and North-eastern Asia.

Genus *MESONTOPLATYS* Motschulsky, 1863

Mesontoplapys Motschulsky, 1860: 42 (incorrect spelling for *Mesontoplatys*, therefore *nomen nudum* thus invalid name).

Mesontoplatys Motschulsky, 1863: 462; Paulian, 1942: 82.

Aphodius (*Mesontoplatys*); A. Schmidt, 1913: 157; Balthasar, 1964: 342; M. Dellacasa, 1988a (1987): 161.

Aphodius (*Aphodius* Artengruppe *Mesontoplatys*); Endrödi, 1960b: 205.

Aphodius (Artengruppe *Mesontoplatys*); Endrödi, 1964a: 285.

Aphodius (group *Mesontoplatys*); Endrödi & Rakovič, 1981: 55.

TYPE SPECIES: *Mesontoplatys rufolaterus* Motschulsky, 1863 (monotypy).

DESCRIPTION. Small size species (length 2.5-4 mm), rather stout, convex, shiny or dull; quite glabrous or with elytra very shortly pubescent. Brown-blackish or brown-yellowish concolorous or yellow-brown with scutellar blackish spot on elytra. Head with epistome distinctly gibbous, punctured; clypeus sinuate at middle, rounded at sides, thinly bordered, border distinctly rather sparsely bristled; genae rounded, ciliate, faintly more protruding than eyes; latter medium sized; frontal suture grooved, not tuberculate. Pronotum transverse, doubly punctured, lateral margins and base bordered. Scutellum small, pentagonal with sides parallel toward base. Elytra oval, not denticulate at shoulder; striae punctured, apically first one wider than second. Fore tibiae distally tridentate and proximally feebly serrulate at outer margin; upper side smooth. Middle and hind tibiae normally widened toward apex and with strong transverse carinae on outer face, apically fimbriate with spinules elongate and progressively unequal. First segment of hind tarsi as long as following two combined. Pygidium with some discal and distal elongate setae. Sexual dimorphism shown in males by feeble lateral callus of pronotum, not obtecting the lateral margin if viewed from above. Aedeagus with rather

short paramera, apically rounded. Epipharynx transverse, anterior margin straight; epitorma drop-shaped; corypha with six strong apical spiculae; pedia pubescent with some stronger spines mixed; chaetopariae rather stout and densely arranged.

DISTRIBUTION. Afrotropical and Oriental region.

Mesontoplatys rufolaterus Motschulsky, 1863 (figs 636, 641-643)

Mesontoplatys rufolaterus Motschulsky, 1863: 462.

Aphodius rufolaterus; Harold in Gemminger & Harold, 1869c: 1058; A. Schmidt, 1909c: 123 (as synonym of *dorsalis*).

Aphodius (Mesontoplatys) rufolaterus; Petrovitz, 1961a: 111 (*bona species*).

TYPE LOCALITY: Colombo [Sri Lanka].

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 2.5-3.5 mm, stout, convex, rather shiny, glabrous, elytra finely sparsely pubescent preapically. Brown-blackish, clypeus and lateral margins of pronotum more or less widely reddish, elytra brown-yellowish with juxtasutural interstice and a triangular scutellar piceous spot widened, at least, till half of sutural margin. Head with epistome gibbous, finely, regularly and rather densely throughout punctured; punctation finer and sparser at centre; clypeus sinuate at middle, rounded at sides, finely bordered, border anteriorly feebly upturned and quite rather sparsely bristled; genae rounded, rather elongately ciliate, feebly more protruding than eyes; frontal suture grooved, not tuberculate. Pronotum transverse, doubly punctured; smaller punctures feebly finer and sparser than those of head, throughout scattered but slightly more coarse on sides; large punctures, four to six times larger than small punctures, irregularly, sparse and less dense on disc; lateral margins thinly bordered, regularly curved and feebly widened toward base, with some sparse proepipleural setae visible from above; hind angles rounded; basal margin not sinuate, thinly bordered. Scutellum with few punctures on basal half. Elytra oval; finely striate, distinctly crenulate; interstices flat, finely sparsely punctured, faintly microreticulate. Fore tibiae apical spur progressively acuminate toward apex. Hind tibiae superior apical spur as long as first tarsal segment; latter as long as following two combined. Male: lateral callus of pronotum feeble, not obtecting the lateral margin if viewed from above. Female: lateral callus of pronotum relatively stronger, obtecting the margin if viewed from above.

DISTRIBUTION. Southern India, Sri Lanka.

Genus *MICROTEUCHESTES* Landin, 1974 **stat. nov.**

Colobopterus (Microteuchestes) Landin, 1974: 238.

Aphodius (Microteuchestes); G. Dellacasa, 1986: 271.

TYPE SPECIES: *Colobopterus brusewitzi* Landin, 1974 (original designation).

DESCRIPTION. Small size species (length 3-4 mm), stout, strongly convex, shiny, glabrous. Quite black. Head with epistome gibbous, strongly, irregularly coarsely punctured; clypeus sinuate at middle, denticulate at sides, thinly bordered, border glabrous and distally upturned; genae rounded, shortly ciliate, more protruding than

eyes; latter medium sized; frontal suture tuberculate. Pronotum transverse, strongly convex, doubly punctured, bordered at base. Scutellum large, triangularly elongate, sunk. Elytra shiny, strongly convex; striae deep, crenulate; interstices convex, punctured. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with short and equal spinules. Pygidium finely, densely and rather shortly entirely pubescent. In males the pronotum has a feeble impression at middle of front margin and the median tubercle of frontal suture is distinctly raised. Females are not so far known but it is probable that pronotal impression could be missing and frontal tubercle could be weaker. Aedeagus with elongate paramera, subcylindrical in lateral view. Epipharynx bisinuate at front margin; epitorma wide drop-shaped; corypha strongly protruding frontward, apically with few short and stout spiculae rounded at apex; chaetopariae elongate, stout and moderately dense.

DISTRIBUTION. Afrotropical region.

Microteuchestes brusewitzi (Landin, 1974) **n. comb.** (figs 637, 644-646)

Colobopterus (*Microteuchestes*) *brusewitzi* Landin, 1974: 238.

Aphodius (*Microteuchestes*) *brusewitzi*; G. Dellacasa, 1986: 271.

TYPE LOCALITY: "Abyssinia" [Ethiopia].

TYPE DEPOSITORY: Entomological Museum, Zoological Institute. Lund (metatype male examined).

DESCRIPTION. Length 3-4 mm, short, stout, strongly convex, shiny, glabrous. Black; antennal club and legs brownish. Head with epistome strongly gibbous, moderately shiny, with large coarse irregular punctation; clypeus sinuate at middle subdenticulate at sides; genae rounded, more protruding than eyes; frontal suture with stronger median tubercle, the lateral ones weaker. Pronotum transverse, strongly convex, shining; with double punctation, the larger punctures mixed with many smaller and very distinct ones; sides bordered, distinctly sinuate before hind angles; latter obtusely rounded; base entirely, strongly bordered. Scutellum elongate, moderately sunk, acuminate apically; microreticulate, sparsely irregularly punctured and rather distinctly bordered at sides. Elytra short, strongly convex, shiny; striae broad, strongly deep, shallowly punctured and moderately crenulate; elytral suture strongly sunk; interstices convex, microreticulate, distinctly punctured, the punctures stronger apically. Hind tibiae superior apical spur as long as first tarsal segment; latter barely longer than following three combined. Male: median tubercle of frontal suture stronger than the lateral ones, somewhat subcorniculate; fore tibiae apical spur stout, downward bent apically; pronotum with a very feeble impression at middle of front margin. Female: unknown.

DISTRIBUTION. Ethiopia, Ivory Coast, South Africa, Transkei.

Genus *MOTHON* Semenov & Medvedev, 1927

Aphodius (*Mothon*) Semenov & Medvedev, 1927: 182.

Mothon; Semenov & Medvedev, 1929: 83; G. Dellacasa, 1994: 35.

TYPE SPECIES: *Aphodius sarmaticus* Semenov & Medvedev, 1927 (monotypy).

DESCRIPTION. Rather small species (length 4-5 mm), stout, strongly convex, moderately shiny, glabrous. Reddish-testaceous; elytra paler with dark suture. Head with epistome strongly granulate; clypeus sinuate at middle, denticulate at sides, thinly distinctly bordered, border elongately bristled laterally; genae rounded, elongately ciliate, more protruding than eyes; latter rather large; frontal suture tuberculate. Pronotum transverse, convex, with variolous-foveolate punctation, punctures somewhat confluent; sides rounded, bordered; hind angles quite rounded; base bordered. Scutellum small, triangular, faintly punctured basally. Elytra convex, oval-elongate, widened backward; striae subcrenulate; interstices faintly convex, sparsely punctured. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side faintly and sparsely punctured. Hind femora moderately widened, abruptly narrowed apically. Tarsi shorter than tibiae. Middle and hind tibiae with strong transverse carinae on outer face; with apical spurs leaf shaped, sublanceolate, apically fimbriate with spinules very short, stout and equal. Pygidium shortly and sparsely ciliate at apical margin. Sexual dimorphism shown in males by more distinct tubercles of frontal suture and by pronotum relatively more transverse, parallel-sided. Aedeagus feebly sclerotized; paramera elongate, apically rounded; in lateral view distinctly acuminate toward apex. Epipharynx nearly straight at front margin, widely rounded at sides; epitorma broadly drop-shaped; corypha protruding frontward, with short, stout, apically rounded, spiculae; pedia elongately pubescent near corypha only, with few stout spinules serially arranged; chaetopariae elongate, strong, moderately dense; pariae distinctly pubescent.

DISTRIBUTION. Southern Ukraine.

REMARKS. The genus *Mothon* is systematically very close to *Mendidius* from which it may be distinguished mainly by punctation of pronotal disc and by particular features of its type species aedeagus.

Mothon sarmaticus (Semenov & Medvedev, 1927) (figs 647, 651-653)

Aphodius (*Mothon*) *sarmaticus* Semenov & Medvedev, 1927: 182.

Mothon sarmaticus; Semenov & Medvedev, 1929: 83; G. Dellacasa, 1994: 36.

TYPE LOCALITY: "Rossia mer., distr. Melitopol: monasterium Korsunskij ad curs. infer. fl. Dnjepr" [Southern Ukraine].

TYPE DEPOSITORY: Zoologicheskij Institut R. A. N. St. Petersburg (lectotype male examined).

DESCRIPTION. Length 4-5 mm, rather stout, strongly convex, moderately shiny, glabrous. Reddish-testaceous; lateral margins of head and pronotum, scutellum and elytra pale testaceous; latter with darker suture. Head with epistome gibbous, strongly, rather densely granulate; clypeus sinuate at middle, denticulate at sides; genae obtusely subauriculate, more protruding than eyes; frontal suture cariniform, feebly trituberculate; front smooth. Pronotum transverse, strongly convex, punctation variolous-foveolate on disc, punctures somewhat confluent; punctures shallow laterally and basally; sides rounded, elongately ciliate, thinly bordered; hind angles quite

rounded; base distinctly bordered. Scutellum rather wide, basally shallowly and largely punctured. Elytra strongly convex, shortly oval, widened backward, apically convex and rounded; striae strongly impressed, distinctly punctured, faintly crenulate; interstices feebly convex on disc, flat apically, finely sparsely punctured. Hind tibiae superior apical spur longer than first tarsal segment; latter nearly as long as following three combined. Male: median tubercle of frontal suture distinct; pronotum relatively less convex, wider, parallel sided. Female: median tubercle of frontal suture nearly faint; pronotum relatively more convex, narrowed frontward.

DISTRIBUTION. The taxon is known from type locality only.

Genus *MOZARTIUS* Nomura & Nakane, 1951

Mozartius Nomura & Nakane, 1951: 46; Balthasar, 1952a: 233 (as synonym of *Caelius*); M. Dellacasa, 1988a (1987): 299.

TYPE SPECIES: *Mozartius testaceus* Nomura & Nakane, 1951 (monotypy).

DESCRIPTION. Small apterous species (length 3.5-4.5 mm), oblong-oval, convex, moderately shiny; nearly glabrous, elytra sparsely pubescent toward apex. Brown-reddish. Head rather large; epistome gibbous, finely punctured; clypeus sinuate at middle, obtusely angulate at sides, thinly bordered, border sparsely bristled; genae obtuse, ciliate, more protruding than eyes; latter small; frontal suture nearly faint. Pronotum transverse, convex, with median longitudinal groove and with two lateral oblique foveolae more or less distinct, seldom obsolete; sides strongly narrowed toward base; front angles widely rounded; lateral margins serrulate, shortly ciliate; hind angles truncate; base strongly bordered, border crenulate. Scutellum small, regularly triangular. Elytra ovate; distinctly denticulate at shoulder; striae wide, deeply punctured; interstices more or less strongly convex, distinctly serially punctured at sides. Fore tibiae distally tridentate and proximally feebly serrulate at outer margin; upper side smooth. Middle and hind tibiae with rather feeble transverse carinae on outer face, apically fimbriate with spinules elongate and irregularly unequal. Hind tibiae superior apical spur shorter than first tarsal segment. Sexual dimorphism shown in males (at least in *Mozartius uenoi* Masumoto, of which males are known) by fore tibiae apical spur falciform. Aedeagus (at least in *Mozartius uenoi* Masumoto) with rather short paramera, apically curved and acuminate. Epipharynx not sinuate at front margin and moderately rounded at sides; epitorma widely drop-shaped; corypha with several apical spiculae (in preparatum of specimen examined they are broken); pedia densely pubescent, with some stout spines mixed; chatopariae moderately dense and moderately elongate.

DISTRIBUTION. Japan.

REMARKS. The genus *Mozartius* results very close to *Koreoxyomus* due to epipharynx features.

In fault of material availability, we were not able to compare the aedeagus of *Mozartius testaceus* Nomura & Nakane with that of *Koreoxyomus koreanus* Kim. On the other hand, the aedeagus of *Mozartius uenoi* Masumoto, as figured in original diagnosis, shows significant differences with that of *Koreoxyomus koreanus*.

Moreover we have not also had the opportunity to examine the type of *Mozartius jugosus* Lewis, which could be preserved in London Museum, because at present it is not available for study.

Concluding it is possible that *Koreoxyomus* might be junior synonym of *Mozartius* but in failure of a thorough study of the more relevant morpho-anatomical structures, essential for establishing the generic value of characters, we maintain as valid and selfstanding genera the involved taxa.

About the bionomy of the species, in literature is recorded that *Mozartius testaceus* was found under dry leaves on mountain sandy area and the two specimens of *Mozartius uenoi* were collected in pitfall traps for Trechinae placed into a cave. The specimens of the typical series of *Koreoxyomus koreanus* were collected in pitfall traps placed within dry leaves in a wooded area with dominant *Quercus mongolica* (Kim, 1996: 102).

Mozartius testaceus Nomura & Nakane, 1951 (figs 648, 654)

Mozartius testaceus Nomura & Nakane, 1951: 46; M. Dellacasa, 1988a (1987): 299.

Caelius testaceus; Balthasar, 1952a: 233.

TYPE LOCALITY: Asagaya, Musashi, Tokyo, Honshu [Japan].

TYPE DEPOSITORY: unknown to authors; type probably lost.

DESCRIPTION. Length 4.5 mm, apterous, oblong-oval, convex, moderately shiny; nearly glabrous, elytra sparsely pubescent toward apex. Brown-reddish; head, lateral margins of pronotum and elytra paler; antennal club yellowish. Head somewhat large and transverse; epistome gibbous, finely, sparsely and irregularly punctured, with two anterior carinae; clypeus broadly sinuate at middle, acutely angulate at sides; genae obtusely angulate, strongly more protruding than eyes; frontal suture nearly obsolete; front sparsely, irregularly and coarsely punctured, laterally faintly impressed. Pronotum transverse, convex, broadened frontward, with wide median longitudinal groove and lateral oblique oval distinct foveolae; doubly, irregularly and coarsely punctured; larger punctures more dense and subconfluent at bottom of median groove and of lateral impressions; front angles widely rounded; sides feebly rounded, narrowed backward; lateral margins feebly serrulate and shortly ciliate; hind angles weakly obliquely truncate; base strongly bordered, border crenulate. Elytra ovate, slightly widened backward; distinctly striate; striae wide, deep, strongly punctured, punctures ovate; lateral ones joined each other toward apex; interstices distinctly convex, juxtasutural conspicuously and other odd interstices more raised than even, with a row of rather small punctures near lateral margins. Scutellum feebly convex, irregularly punctured. First segment of fore tarsi elongate, nearly as long as following three combined. Hind tibiae superior apical spur shorter than first tarsal segment; latter nearly as long as following three combined. Male unknown.

DISTRIBUTION. Japan.

REMARKS. We had the opportunity to examin only one old female specimen from Unoki, Oota-ku, Tokyo, 17.04.1982. Leg. K. Kimura (K. Masumoto collection, Yokohama).

Genus *NEAGOLIUS* W. Koshantschikov, 1912 **stat. nov.**

Aphodius (*Neagolius*) W. Koshantschikov, 1912: 517; Balthasar, 1964: 136 (as synonym of *Agolius*); G. Dellacasa, 1983: 317; Král, 1995: 101 (as synonym of *Agolius*).

TYPE SPECIES: *Aphodius falcispinis* W. Koshantschikov, 1912 (original designation).

DESCRIPTION. Small or rather small species (length 4-6 mm), moderately shiny, glabrous; males usually relatively more elongate and moderately convex; females often short oval, globous. Brownish, elytra with darker spots, or piceous, sometimes pale testaceous. Head rather small, epistome gibbous, distally more or less widely flat, punctured, punctation anteriorly usually denser, sometimes subrugose and confluent; clypeus nearly semicircular, at most subtruncate or faintly sinuate anteriorly, quite thinly bordered, border glabrous; genae rounded, ciliate, feebly more protruding than eyes; latter medium sized; frontal suture not tuberculate. Pronotum coarsely punctured; hind angles obtuse or rounded; basal border distinct till fifth elytral interstice level only. Scutellum small, triangular. Elytra not denticulate at shoulder; striae punctured, more or less distinctly crenulate; interstices quite flat or feebly convex, sparsely and finely punctured. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side faintly punctured. Middle and hind tibiae with rather strong transverse carinae on outer face; apically fimbriate with elongate and irregularly unequal spinules. Fore tibiae apical spur, in males, often elongate till apex of second tarsal segment; inferior apical spur of middle tibiae acuminate, obtuse or truncate apically, shorter than superior one. Pygidium with fine, few dense and recumbent pubescence, mixed few straight elongate setae; its apical margin with sparse and moderately elongate cilia. Sexual dimorphism shown in males by the particular shape of fore tibiae apical spur; by colour usually darker; by wings always perfectly functional. Aedeagus and epipharynx with peculiar characteristics impossible to be summarized.

DISTRIBUTION. Palearctic region.

Neagolius falcispinis (W. Koshantschikov, 1912) **n. comb.** (figs 649, 655-657)

Aphodius (*Neagolius*) *falcispinis* W. Koshantschikov, 1912: 517; G. Dellacasa, 1983: 324.

Aphodius (*Agolius*) *falcispinis*; Balthasar, 1964: 150; Král, 1995: 102.

TYPE LOCALITY: "in den Bergen des Chinesischen Turkestan" [China].

TYPE DEPOSITORY: Zoologicheskij Institut R. A. N. St. Petersburg (type not examined).

DESCRIPTION. Length 4-4.5 mm, oblong, moderately convex, shiny, glabrous. Male brown-reddish; head at sides and pronotum front angles reddish; elytra usually with discal elongate spot dark brownish. Female quite testaceous. Head with epistome gibbous, sparsely but nearly regularly punctured, punctation confluent and rather indistinct anteriorly; clypeus faintly sinuate at middle, widely rounded at sides; genae rounded, feebly more protruding than eyes; frontal suture not tuberculate. Pronotum transverse, feebly convex, strongly shiny, coarsely, sparsely and rather irregularly punctured, punctation more dense laterally; sides thickly bordered; hind angles obtusely rounded; basal border distinct till fifth elytral interstice level, at middle crenulate by large and coarse punctures. Scutellum wide, sparsely and coarsely punctured. Elytra

elongate, regularly oval, feebly convex, strongly shiny; striae fine, distinctly punctured, feebly crenulate; interstices flat, sparsely, finely but distinctly punctured. Middle tibiae inferior apical spur shortened in both sexes, apically faintly hooked in males. Hind tibiae superior apical spur slightly longer than first tarsal segment; latter nearly as long as following three combined. Male: pronotum transverse; fore tibiae apical spur compressed, sinuately curved downward, sickle shaped. Female: pronotum narrowed frontward; fore tibiae apical spur feebly curved downward, regularly acuminate toward apex.

DISTRIBUTION. Chinese Turkestan, Mongolian and Siberian mountains.

Genus *NEOCALAPHODIUS* Bordat, 1990 **stat. nov.**

Aphodius (*Calaphodius*) Reitter, 1892: 228 (*partim*); G. Dellacasa, 1983: 131 (as synonym of *Agolius*).

Calaphodius; Paulian, 1942: 64.

Aphodius (*Neocalaphodius*) Bordat, 1990b: 47; M. Dellacasa, 1988a (1987): 239.

TYPE SPECIES: *Aphodius moestus* Fabricius, 1801 (original designation).

DESCRIPTION. Medium size species (length 5-6 mm), elongate, moderately convex, shiny, glabrous. Yellowish, with epistome, pronotum disc and two longitudinal spots on elytra, blackish. Head large; epistome gibbous, punctured; clypeus anteriorly truncate, rounded at sides, quite thinly bordered, border distinctly bristled; genae rounded, shortly ciliate, slightly more protruding than eyes; latter rather large; frontal suture not tuberculate. Pronotum transverse, with sparse, irregular and double punctation; hind angles rounded; base not bordered. Scutellum small, pentagonal with sides parallel toward base. Elytra shiny, with striae fine, punctured, feebly crenulate; interstices flat and sparsely punctured. Fore tibiae distally tridentate and proximally not serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules elongate and irregularly unequal. Pygidium with few, very elongate and straight setae; its apical margin sparsely and elongately ciliate. Sexual dimorphism shown in males by less convex epistome; by pronotum anteriorly not narrowed; by metasternal plate longitudinal groove more strongly impressed and densely punctured; by fore tibiae apical spur relatively shorter and downward bent apically. Aedeagus with stout, apically membranous paramera. Epipharynx transverse, bisinuate at front margin, rounded at sides; epitorma almost faint; corypha with elongate apical spiculae more protruding beyond front margin; chaetopariae setiform, short and dense; pedia finely pubescent.

DISTRIBUTION. South-eastern Palearctic, Afrotropical and Southern Oriental region.

Neocalaphodius moestus (Fabricius, 1801) **n. comb.** (figs 650, 662-664)

Aphodius moestus Fabricius, 1801: 78.

Aphodius (*Calaphodius*) *moestus*; A. Schmidt, 1913: 138; Landin, 1956a: 218 (lectotype designation).

Calaphodius moestus; Paulian, 1942: 64.

Aphodius (*Neocalaphodius*) *moestus*; Bordat, 1990b: 47; M. Dellacasa, 1988a (1987): 163.

TYPE LOCALITY: "India orientali" [India].

TYPE DEPOSITORY: Zoologisk Museum. Kiel (lectotype examined).

DESCRIPTION. Length 5-6 mm, elongate, moderately convex, shiny, nearly glabrous. Yellowish; epistome, pronotal disc, elytral striae and two longitudinal stripes respectively on fourth and sixth interstices, blackish. Head wide, moderately shiny; epistome gibbous, with double and irregular punctation more dense on sides; clypeus almost truncate anteriorly, widely rounded at sides; genae small, slightly more protruding than eyes; frontal suture distinctly impressed, not tuberculate. Pronotum transverse, convex, shiny, with double, irregular and sparse punctation; front and hind angles widely rounded; base not bordered. Scutellum elongate, apically acuminate, strongly microreticulate, sparsely and superficially punctured. Elytra elongate, moderately convex, shiny; striae fine, distinctly punctured, feebly crenulate, apically more or less faint; interstices flat, sparsely and finely punctured, rarely apically with few extremely short and sparse yellowish hairs. Hind tibiae superior apical spur distinctly shorter than first tarsal segment; latter as long as following three combined. Male: epistome relatively less convex; pronotum wider; fore tibiae apical spur shorter, more flat and distinctly downward bent; metasternal plate longitudinal groove more strong, wider and more distinctly punctured. Female: epistome relatively more convex; pronotum narrowed anteriorly; front tibiae apical spur more slender and acuminate; metasternal plate longitudinal groove more feeble and almost smooth.

DISTRIBUTION. South-eastern Palearctic (up to Eastern Turkey), Afrotropical and South Oriental region.

Genus *NEOCOLOBOPTERUS* Landin, 1974 **stat. nov.**

Colobopterus (*Neocolobopterus*) Landin, 1974: 235.

Colobopterus (group *Neocolobopterus*); Endrödi & Rakovič, 1981: 35.

Aphodius (*Neocolobopterus*); G. Dellacasa, 1986: 206.

TYPE SPECIES: *Aphodius abyssinicus* Harold, 1861 (original designation).

DESCRIPTION. Medium size species (length 5-10 mm), oblong, flattened, dull or shiny, glabrous. Head and pronotum blackish, latter more or less widely yellowish; elytra dirty yellowish, sometimes with cloudy blackish spot or quite piceous. Head shiny, epistome rather flat or moderately convex, punctured, at least in males tuberculate; clypeus more or less distinctly sinuate at middle, widely rounded at sides, thinly bordered, border very shortly bristled and apically upturned; genae rounded, sometimes auriculate, shortly ciliate, more protruding than eyes or not; latter medium sized; frontal suture feebly impressed. Pronotum strongly convex, transverse, with double punctation, usually distinctly bordered at base, sometimes at front margin too. Scutellum large, concave, depressed, triangularly elongate, punctured. Elytra flattened on disc, truncate apically so that pygidium is more or less widely exposed; striae usually feebly impressed, more or less distinctly crenulate; interstices flat or convex, often alutaceous, usually irregularly and sparsely punctured, seldom with coarse punctation. First segment of hind tarsi usually longer than following three combined. Fore tibiae distally tridentate and proximally faintly serrulate at outer margin; upper side nearly smooth. Middle and hind

tibiae with strong transverse carinae on outer face; apically fimbriate with stout, elongate and irregularly unequal spinules. Pygidium with few, very elongate discal setae and, near apical margin, with a belt of large, coarse and elongately setigerous punctures. Sexual dimorphism shown in males by tuberculate epistome and sometimes by a distinct impression at middle of front margin of pronotum. Aedeagus large, strongly sclerotized; paramera laterally with many small and more or less distinct granules. Epipharynx not or very feebly sinuate at middle of front margin; epitorma faint frontward; corypha with elongate stronger setae more densely arranged at middle of front margin or with apical protruding spiculae; chaetopariae usually arranged in two parallel belts, almost dense, elongate and rather slender.

DISTRIBUTION. Afrotropical region.

Neocolobopterus abyssinicus (Harold, 1861) **n. comb.** (figs 658, 665-667)

Aphodius abyssinicus Harold, 1861: 102.

Aphodius (*Colobopterus*) *ballioni* var. *abessinicus*; A. Schmidt, 1913: 119 (incorrect spelling).

Colobopterus (*Neocolobopterus*) *abyssinicus*; Landin, 1974: 235.

Aphodius (*Neocolobopterus*) *abyssinicus*; G. Dellacasa, 1986: 208.

TYPE LOCALITY: "Abyssinien" [Ethiopia].

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (type male examined).

DESCRIPTION. Length 7-8 mm, oblong, convex, flattened longitudinally, moderately shiny, glabrous. Blackish, pronotum with front angles reddish only, rarely yellowish at sides; elytra brown-yellowish. Head strongly shiny, with epistome rather flat, finely and regularly punctured; clypeus distinctly sinuate at middle, rounded at sides; genae rounded, auriculate and distinctly more protruding than eyes; frontal suture finely impressed, laterally faintly raised. Pronotum strongly convex, broad, rather shiny, with double and nearly regular punctation; front margin bordered till eyes level only; sides rounded and distinctly bordered; hind angles obtusely truncate; base feeble bisinuate, with vestiges of border till to level of fifth elytral interstice. Scutellum dull, sunk, indistinctly and superficially punctured, with a trace of a longitudinal median carina. Elytra broad, somewhat dull, flattened on disc; striae very fine, feebly impressed, slightly punctured, rather not crenulate; interstices flat, microreticulate, with sparse and almost imperceptible punctation. Hind tibiae superior apical spur shorter than first tarsal segment; latter feebly plump apically and as long as following three combined. Male: clypeus distinctly sinuate at middle, with margins more or less strongly upturned at front angles; epistome with a median tubercle strong and conical; pronotum relatively more sparsely punctured, with large median impression at middle of front margin and barely broader than elytral base. Female: clypeus relatively more feebly sinuate at middle and with margin not upturned near front angles; epistome with median tubercle much weaker; pronotum with more dense punctation and not broader than elytral base.

DISTRIBUTION. Ethiopia.

Genus *NEODIAPTERNA* G. Dellacasa, 1986 **stat. nov.**

Aphodius (*Neodiapterna*) G. Dellacasa, 1986: 244.

TYPE SPECIES: *Aphodius erichsoni* Harold, 1861 (original designation).

DESCRIPTION. Medium size species (length 7-9 mm), strongly convex, shiny, glabrous. Blackish, elytral apex more or less widely yellowish. Head with epistome feebly gibbous, punctured; clypeus slightly sinuate at middle, rounded at each side, distinctly bordered, border shortly bristled; genae obtusely rounded, very shortly ciliate, more protruding than eyes; latter medium sized; frontal suture not tuberculate. Pronotum transverse, doubly punctured, not bordered at base. Scutellum large, flat, triangularly elongate. Elytra regularly convex, rounded laterally; striae crenulate; interstices nearly flat. Fore tibiae distally tridentate and proximally not serrulate at outer margin; upper side coarsely and more or less densely punctured. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with short and equal spinules. Pygidium with few and very elongate cilia at apical margin. Sexual dimorphism shown in males by fore tibiae apical spur relatively shorter and stouter; by pronotum not frontwardly narrowed and more sparsely punctured on disc. Aedeagus slender, strongly elongate, with very short and wide paramera. Epipharynx with many pubescent lobes at anterior margin; epitorma faint toward corypha; latter triangularly protruding beyond front margin and with short and stout apical spiculae; chaetopariae moderately elongate, slender and rather dense.

DISTRIBUTION. Neotropical region.

Neodiapterna erichsoni (Harold, 1861) **n. comb.** (figs 659, 668-670)

Aphodius erichsoni Harold, 1861: 104.

Aphodius (*Diapterna*) *erichsoni*; W. Koshantschikov, 1913b: 262.

Aphodius (*Neodiapterna*) *erichsoni*; G. Dellacasa, 1986: 244.

TYPE LOCALITY: "Brasilien" [Brazil].

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (type male examined).

DESCRIPTION. Length 7-9 mm, oval-elongate, strongly convex, shiny, glabrous. Blackish, apex of elytra broadly yellowish. Head shiny with epistome feebly gibbous, finely, regularly and rather sparsely punctured; clypeus feebly sinuate and slightly depressed at middle, largely rounded at sides; genae obtusely rounded, more protruding than eyes; frontal suture finely impressed, not at all tuberculate. Pronotum transverse, moderately convex, shiny, with double punctation; irregularly and sparsely scattered larger punctures mixed with almost imperceptible and denser ones; sides not bordered, feebly sinuate before hind angles; latter obtuse; base not bordered. Scutellum very elongate, rather flat, apically acuminate; with large punctures rather sparse. Elytra regularly convex, broad, moderately rounded at sides; shiny; striae very deep and distinctly crenulate; interstices rather flat, shallowly microreticulate and finely punctured. Hind tibiae superior apical spur shorter than first tarsal segment; latter nearly as long as following three combined. Male: fore tibiae apical spur relatively shorter and stouter; anterior femora with a tuft of dense hairs at front margin near coxae; pronotum relatively more sparsely punctured. Female: fore tibiae apical spur slender and acuminate; pronotum with punctation relatively denser.

DISTRIBUTION. Brazil, Argentine and Paraguay.

Genus *NEOEMADIELLUS* Clément, 1987 **stat. nov.**

Aphodius (*Neoemadiellus*) Clément, 1987: 177.

Aphodius (*Madagaphodius*) Bordat, 1990b: 40 (**n. syn.**).

TYPE SPECIES: *Aphodius uxoris* Clément, 1987 (original designation).

DESCRIPTION. Small species (length 3.5-4 mm), moderately convex, shiny, quite glabrous or with elytra very finely pubescent. More or less pale brownish, sometimes elytra with yellowish humeral and preapical spots. Head with epistome feebly gibbous, punctulate; clypeus sinuate at middle, rounded at sides, not bristled; genae rounded, nearly glabrous, faintly more protruding than eyes; latter medium sized; frontal suture not tuberculate. Pronotum transverse, doubly punctured; hind angles obliquely truncate, anterior margin and base not bordered. Scutellum small, triangular. Elytra with small denticle at shoulder; striae punctured and crenulate, first one as wide as second apically; interstices more or less distinctly convex, sometimes nearly cariniform apically; fifth and seventh interstices joined each other before apex and more or less raised in distinct fold contouring the sixth interstice. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side coarsely but rather sparsely punctured. Middle and hind tibiae with feeble transverse carinae on outer face, apically fimbriate with spinules elongate and irregularly unequal. Pygidium with few straight discal setae. Sexual dimorphism shown in males by metasternal plate more deeply concave and less densely punctured. Aedeagus with paramera regularly curved and acuminate apically. Epipharynx broadly transverse; anterior margin sinuate at middle; epitorma drop-shaped, not reaching the front margin; corypha with two strong apical spiculae; chaetopariae rather slender; pedia finely pubescent, with some stouter chaetae anteriorly mixed; dexio- and pternotormae short.

DISTRIBUTION. Madagascar subregion.

REMARKS. One of us (Bordat, 1990) separated *Madagaphodius* from *Neoemadiellus* on the basis of their relatively more elongate shape and of pubescent elytra but these characters do not result of generic value, therefore *Madagaphodius* is herein considered junior synonym of *Neoemadiellus*.

Neoemadiellus uxoris (Clément, 1987) **n. comb.** (figs 660, 671-673)

Aphodius (*Neoemadiellus*) *uxoris* Clément, 1987: 177.

TYPE LOCALITY: Manjakatempo, versant S.E. de l'Ankaratra, Madagascar.

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (holotype male examined).

DESCRIPTION. Length 3.5-4 mm, moderately convex, shiny, glabrous. Piceous; epistome and lateral margins of pronotum more or less widely brown-yellowish; elytra brown-yellowish, with sutural margin and a wide transverse cloudy spot darker, moreover with subhumeral and preapical small yellowish maculae. Head with epistome feebly gibbous, finely, sparsely and regularly punctured, punctation sparser at centre; clypeus feebly sinuate at middle, widely rounded at sides; genae small, obtusely rounded, faintly more protruding than eyes; frontal suture finely impressed; front finely punctured with few

larger punctures mixed. Pronotum transverse, doubly punctured; smaller punctures somewhat larger than those on head and throughout scattered; large punctures, five to six times larger than smaller punctures, lacking on disc, rather dense around but less dense on sides. Scutellum slightly wider than first two elytral interstices, sparsely and finely punctured. Elytra finely striate; striae distinctly crenulate; interstices feebly convex on disc, more strongly convex toward apex, finely and sparsely punctured. Fore tibiae apical spur normally acuminate toward apex in both sexes. Hind tibiae superior apical spur shorter than first tarsal segment; latter longer than following three combined. Male: metasternal plate distinctly concave and relatively less densely punctured. Female: metasternal plate nearly flat and relatively more densely punctured.

DISTRIBUTION. Mountains of Central and Eastern Madagascar.

Genus *NEOHEPTAULACUS* Paulian & Villiers, 1941

Neoheptaulacus Paulian & Villiers, 1941: 185.

Trichaphodius (*Schmidtaphodius*) Paulian, 1942: 55 (**n. syn.**).

Aphodius (*Schmidtaphodius*); M. Dellacasa, 1988a (1987): 341 (as synonym of *Trichaphodius*).

TYPE SPECIES: *Aphodius puberulus* Boheman 1857 (original designation).

DESCRIPTION. Small or medium size species (length 4-6 mm), oval-elongate, convex; head and pronotum shiny, elytra more or less strongly microreticulate so few shiny but apically always dull and more or less diffusedly pubescent, sometimes shortly sparsely pubescent apically only. Quite brown-reddish or brown-blackish; sometimes clypeal margin, pronotum sides and elytral disc paler. Head narrowed frontward; epistome more or less strongly gibbous, rather densely punctured; clypeus nearly quite rounded or faintly sinuate at middle and rounded at sides, thinly bordered, border shortly bristled; genae small, rounded, shortly ciliate, not or feebly more protruding than eyes; latter medium sized; frontal suture finely impressed, not at all tuberculate. Pronotum strongly transverse, the greater width at base, rather densely punctured on disc too; base not bordered. Scutellum small, triangular, with curved sides. Elytra oval, with small denticle at shoulder, more or less broadly punctato-striate, first stria larger than other ones toward apex; interstices more or less convex, microreticulate and punctured. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side regularly, coarsely and rather sparsely punctured. Middle and hind tibiae with rather strong transverse carinae on outer face, apically fimbriate with elongate and progressively unequal spinules. Hind tibiae superior apical spur shorter than first tarsal segment. Pygidium with long straight sparse setae on disc and apically. Sexual dimorphism shown in males by fore tibiae apical spur somewhat stouter, rounded and feebly hooked apically. Aedeagus with paramera short, curved and acuminate apically. Epipharynx transverse, not or feebly sinuate at middle of front margin; epitorma triangular, not reaching front margin; corypha with two elongate apical spiculae; pedia rather densely and shortly pubescent with some stout spines mixed.

DISTRIBUTION. Afrotropical region.

REMARKS. The original diagnosis of genus *Neoheptaulacus* is supported by several figures of features of its type species "*puberulus*", at that time considered pertaining to *Heptaulacus*.

Nevertheless, if general characteristics of other morphological pieces could be considered correct enough, adversely the epipharynx does not correspond to that of *puberulus* Boheman, 1857. One of us (Bordat) examining the type specimen of said taxon checked, e. g., that anterior margin of epipharynx is not sinuate at middle contrary to what appears in the figure supporting the description of the type species of the new genus *Neoheptaulacus*.

On the other hand, Paulian (1942) created the subgenus *Schmidtaphodius* for *Trichaphodius* taxa sharing several common discriminant characters but omitting to designate its type species. M. Dellacasa (1988: 341) to fill the gap designated *Aphodius hepaticolor* Quedenfeldt, 1884 type species of *Schmidtaphodius*, therefore considering it synonym of *Trichaphodius*. But *Aphodius hepaticolor* results systematically very close to *puberulus* and thus *Schmidtaphodius* has to be considered junior synonym of *Neoheptaulacus*. Obviously, we herein proposed the **new combination**: *Neoheptaulacus hepaticolor* (Quedenfeldt, 1884).

Neoheptaulacus puberulus (Boheman, 1857) (figs 661, 674-676)

Aphodius (Div. *U* Erichson) *puberulus* Boheman, 1857: 360.

Aphodius (*Oxyomus*) *puberulus*; Péringuey, 1901: 413.

Heptaulacus puberulus; A. Schmidt, 1907b: 101.

Neoheptaulacus puberulus; Paulian & Villiers, 1941: 185.

Aphodius (*Trichaphodius*) *puberulus*; M. Dellacasa, 1988a (1987): 398.

TYPE LOCALITY: "Caffraria" [South Africa].

TYPE DEPOSITORY: Naturhistoriska Riksmuseet. Stockholm (type examined).

DESCRIPTION. Length 4.5-5.5 mm, oval-elongate, convex; head and pronotum shiny, elytra sericeous, rather widely pubescent toward apex. Brown-reddish or piceous. Head with epistome feebly gibbous, regularly finely and rather densely punctured, punctation somewhat sparser and finer at centre; clypeus nearly semicircular; genae rounded, faintly more protruding than eyes; frontal suture very finely impressed, not at all tuberculate; front with some larger punctures laterally. Pronotum transverse, doubly punctured, smaller punctures like those on head; large punctures, three to five times larger than small punctures, more densely arranged at sides of disc and toward base; sides and hind angles thinly bordered; latter obtusely rounded; base feebly bisinuate, not bordered. Scutellum distinctly microreticulate, with few punctures on basal half only. Elytra oval, with rather fine and subcrenulate striae; interstices feebly convex on disc, microreticulate laterally only, toward apex quite strongly microreticulate and sparsely finely punctured; setigerous punctures aligned near striae, widely lacking around scutellum only. Hind tibiae superior apical spur a quarter shorter than first tarsal segment; latter somewhat longer than following three combined. Male: fore tibiae apical spur relatively stouter and apically rounded. Female: fore tibiae apical spur slender and regularly acuminate toward apex.

DISTRIBUTION. South Africa (Zululand), Kenya (Tsavo National Park).

Genus *NIALAPHODIUS* H. J. Kolbe, 1908 **stat. nov.**

Aphodius (*Nialaphodius*) H. J. Kolbe, 1908: 128; A. Schmidt, 1913: 167 (as synonym of *Nialus*); M. Dellacasa, 1988a (1987): 167 (valid subgenus); Bordat, 1990b: 60.

TYPE SPECIES: *Aphodius nigrita* Fabricius, 1801 (monotypy).

DESCRIPTION. Rather small species (length 3.5-5.5 mm) subcylindrical, convex, shiny, glabrous. More or less dark brown-reddish. Head with epistome gibbous, punctured; clypeus sinuate at middle, rounded at sides, quite thinly bordered; border shortly bristled; genae rounded, ciliate, faintly more protruding than eyes; latter medium sized; frontal suture trituberculate. Pronotum strongly convex, doubly punctured; sides regularly rounded; base not bordered. Scutellum small, subpentagonal. Elytra parallel-sided; not denticulate at shoulder; striae punctured, feebly crenulate, first one feebly wider than second toward apex; interstices slightly convex and sparsely punctured. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with short and equal spinules. Abdominal sternites pubescent. Pygidium with four discal and two apical rather elongate setae. Sexual dimorphism shown in males by more raised median tubercle of frontal suture and by front foveolate at middle. Aedeagus with paramera rather short and rounded apically. Epipharynx transverse; anterior margin feebly sinuate at each side; epitorma drop-shaped; corypha with six apical spiculae; chaetopariae short; pedia pubescent with some stout spines mixed.

DISTRIBUTION. Southern Nearctic, Northern Neotropical and Afrotropical region, Madagascar.

Nialaphodius nigrita (Fabricius, 1801) **n. comb.** (figs 677-680)

Aphodius nigrita Fabricius, 1801: 73.

Aphodius (*Nialaphodius*) *nigrita* H. J. Kolbe, 1908: 128; M. Dellacasa, 1988a (1987): 168; Bordat, 1990b: 61.

Aphodius (*Nialus*) *nigrita*; A. Schmidt, 1913: 169; Landin, 1956a: 215 (lectotype designation).

Nialus nigrita; Paulian, 1942: 97.

Aphodius (*Aphodius* Artengruppe *Nialus*) *nigrita*; Endrödi, 1960b: 167.

Aphodius (Artengruppe *Nialus*) *nigritus* (sic!); Endrödi, 1964a: 186.

TYPE LOCALITY: Isle de France [Mauritius Isle].

TYPE DEPOSITORY: Zoologisk Museum, Universitets København. Copenhagen (lectotype male examined).

DESCRIPTION. Length 3.5-4 mm, convex, subcylindrical, shiny, glabrous. Blackish, piceous or dark brown-reddish; clypeus, fore and lateral margins of pronotum and elytral disc more or less widely paler. Clypeus with epistome gibbous, simply, finely, densely and regularly throughout punctured; clypeus distinctly sinuate at middle, rounded at sides; genae rounded, rather elongately ciliate, faintly more protruding than eyes; frontal suture feebly raised, with strong median tubercle, lateral ones weaker and transverse. Pronotum transverse, doubly punctured; smaller, fine and dense punctures throughout scattered; large punctures, six to eight times larger than small punctures, irregular, rather

sparse and lacking toward lateral margins. Scutellum with some small punctures on basal half. Elytra rather short, subparallel-sided; finely striate; striae wider toward apex, feebly crenulate on disc only; interstices slightly convex, finely and sparsely punctured, preapically more convex and more distinctly punctured. Fore tibiae apical spur regularly acuminate toward apex in both sexes. Hind tibiae superior apical spur shorter than first tarsal segment; latter as long as following two combined. Male: frontal suture with median tubercle relatively stronger; front foveolate at middle. Female: frontal suture relatively weakly tuberculate; front without median foveola.

DISTRIBUTION. Southern Nearctic, Neotropical (Central America) and Afrotropical region, Madagascar, Mascarene and Seychelles Islands.

Genus *NIALOSTERNUS* Hollande & Thérond, 1999 **stat. nov.**

Aphodius (*Nialosternus*) Hollande & Thérond, 1999 (1998): 96.

TYPE SPECIES: *Aphodius sitiphoides* d'Orbigny, 1896 (original designation).

DESCRIPTION. Small size species (length 3-5 mm), oval-elongate, stout, convex, moderately shiny, glabrous. Reddish-testaceous. Head rather small with epistome feebly convex and coarsely punctured; clypeus deeply sinuate at middle, more or less strongly angulate at sides, thickly bordered, border upturned and quite distinctly bristled; genae auriculate, obtusely rounded, ciliate, feebly more protruding than eyes; latter rather large; frontal suture with a distinct median conic tubercle and transversely raised laterally; front punctured and somewhat depressed at middle. Pronotum transverse, globose, coarsely and more or less regularly punctured; sides broadly rounded, thinly bordered, border glabrous; hind angles widely obtusely rounded; base rather thinly bordered. Propleura elongately ciliate. Scutellum small, pentagonal with sides parallel toward base. Elytra strongly convex, feebly broadened backwardly, not denticulate at shoulder; striae fine, distinctly crenulate; interstices feebly convex, sparsely but distinctly punctured. Fore tibiae distally tridentate and proximally not serrulate at outer margin; upper side finely and sparsely punctured. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules progressively unequal and with one strongly elongate apical spinula emerging among others near the outer angle of upper apical margin. Superior apical spur of hind tibiae nearly as long as first tarsal segment; latter as long as following two combined. All segments with an inner apical seta longer than following segment. Claws slender and elongate. Pygidium with sparse, short and almost straight pubescence, mixed several very elongate straight setae; its apical margin finely, sparsely and elongately ciliate. Sexual dimorphism shown in males by central tubercle of frontal suture relatively more raised and more sharp; by pronotum more transverse and more strongly globose. Aedeagus feebly sclerotized, with paramera elongate, rounded apically. Epipharynx transverse, with anterior margin slightly bisinuate, rounded at sides; epitorma widely campaniform; corypha with a tuft of apical spiculae frontwardly protruding; chaetopariae rather short and moderately dense; pedia sparsely and elongately pubescent with few stouter spines mixed and subserially arranged.

DISTRIBUTION. South-western Palearctic region.

Nialosternus sitiphoides (d'Orbigny, 1896) **n. comb.** (figs 681, 684-686)

Aphodius (*Erytus*) *sitiphoides* d'Orbigny, 1896b: 149.

Aphodius (*Mendidius*) *tschadensis* Petrovitz, 1963b: 636; Pittino, 1984: 293 (as synonym of *sitiphoides*).

Aphodius (*Mendidaphodius*) *sitiphoides*; Balthasar, 1964: 105.

Aphodius (*Mendidius*) *irakanus* Petrovitz, 1965: 675; Pittino, 1984: 293 (as synonym of *sitiphoides*).

Aphodius (*Mendidius*) *sitiphoides*; Petrovitz, 1965: 676; (?) G. Dellacasa, 1979: 181.

Aphodius (*Calamosternus*) *mothomimus* Paulian, 1980: 148; Pittino, 1984: 293 (as synonym of *sitiphoides*).

Aphodius (*Nialosternus*) *sitiphoides*; Hollande & Thérond, 1999 (1998): 97.

TYPE LOCALITY: Biskra, "Algérie" (restricted).

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (type not examined).

DESCRIPTION. Length 3-5 mm; oval-elongate, stout, convex, rather shiny, glabrous. Reddish testaceous; clypeal margin, two lateral spots and basal margin of pronotum, and elytral suture brownish; legs reddish; antennal club yellowish. Head rather small, frontwardly somewhat narrowed; epistome feebly convex at middle, with large and coarse punctation, sometimes punctures faintly rugose because confusedly confluent; clypeus deeply sinuate at middle, usually angulate and upturned at sides; genae obtusely rounded, more or less auriculate, rather shortly and sparsely ciliate, feebly more protruding than eyes; frontal suture impressed, with sharp conical tubercle at middle, transversely raised at sides; front somewhat depressed at middle, toward frontal and genal sutures coarsely but rather sparsely punctured, smooth backwardly. Pronotum transversely globose, strongly convex, usually coarsely and nearly regularly punctured; punctation sparser basally and denser on sides; latter widely rounded, distinctly bordered, border glabrous; hind angles broadly obtusely rounded; base not bisinuate, distinctly but rather thinly bordered. Propleura sparsely and elongately ciliate. Scutellum strongly alutaceous, with few large and superficial punctures irregularly scattered. Elytra strongly convex, ovally elongate and feebly widened posteriorly; striae deep, rather fine, distinctly crenulate; interstices slightly convex on disc, flat toward apex, rather finely and sparsely but distinctly punctured, punctation somewhat denser apically. Male: median tubercle of frontal suture relatively more raised and sharp; pronotum more transverse and more strongly globose. Female: median tubercle of frontal suture relatively more feeble and less acuminate; pronotum less transverse and moderately globose.

DISTRIBUTION. Saharian and Subsaharian provinces of Palearctic Africa (Morocco, Algeria, Tunisia, Libya), Middle East (Israel, Syria, Iraq); Saudi Arabia.

REMARKS. Species extremely variable in size, shape and sculpture. The punctation of pronotum varies from fine to coarse, from rather regularly to more or less irregularly scattered; sometimes smaller and finer punctures are mixed among larger and coarser ones. The clypeus may be either subdenticulate or more or less distinctly angulate at sides of median sinuosity. The genae may be more or less strongly auriculate.

The wide distribution and the relevant variability of the morphological features,

though absolutely individual and lacking of any taxonomical value, rose to several synonymies and to the uncertain generic attribution.

On the other hand the taxon may be easily and correctly identified by the constant character of the sole elongate spinula nearly as long as the first two tarsal segments combined and emerging among others at apex of middle and hind tibiae.

Genus *NIALUS* Mulsant & Rey, 1870

Aphodius (*Aphodius* division *Nialus*) Mulsant & Rey, 1870b (1869): 456.

Aphodius (*Nialus*); Mulsant & Rey, 1871 (1870): 474; Reitter, 1892: 201; Balthasar, 1964: 418; G. Dellacasa, 1983: 341.

Nialus; Paulian, 1942: 94; Ádám, 1994: 13.

Aphodius (*Aphodius* Artengruppe *Nialus*); Endrödi, 1960b: 164.

Aphodius (Artengruppe *Nialus*); Endrödi, 1964a: 178.

Aphodius (group *Nialus*); Endrödi & Rakovič, 1981: 47.

TYPE SPECIES: *Aphodius varians* Duftschmid, 1805 (subsequent designation: Reitter, 1892).

DESCRIPTION. Small or medium size species (length 4-6 mm), elongate, subcylindrical, shiny, glabrous. Blackish, elytra sometimes reddish spotted basally, rarely quite reddish; inferiorly blackish. Head with epistome gibbous, punctured; clypeus sinuate at middle, angulose or rounded at sides, quite thickly bordered, border bristled; genae rounded, elongately and sparsely ciliate, feebly more protruding than eyes; latter medium sized; frontal suture tuberculate. Pronotum convex, doubly and sparsely punctured; base not bordered or border widely interrupted at middle. Scutellum small, pentagonal, sparsely punctured. Elytra elongate, parallel sided; striae distinctly crenulate; interstices nearly flat, punctured. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with spinules rather short but progressively unequal. Pygidium coarsely punctured, with fine, dense and recumbent pubescence; its apical margin finely, densely and rather elongately ciliate. Sexual dimorphism shown in males by more strong tubercles of frontal suture and by fore tibiae apical spur stouter and obtusely rounded apically. Aedeagus with paramera elongate, membranously widened apically. Epipharynx transverse, distinctly sinuate at fore margin, moderately rounded at sides; epitorma drop-shaped; corypha with acuminate apical spiculae, central ones strongly protruding beyond fore margin; pedia pubescent near corypha only and with few spines sparsely mixed; chaetopariae short, stout, rather sparsely arranged.

DISTRIBUTION. Palearctic and Afrotropical (?) region.

Nialus varians (Duftschmid, 1805) (figs 682, 687-689)

Aphodius varians Duftschmid, 1805: 93.

Aphodius (*Nialus*) *variens*; Mulsant & Rey, 1871 (1870): 474; Reitter, 1892: 203.

Nialus varians; Ádám, 1994: 13.

TYPE LOCALITY: "in Oberösterreich" [Austria].

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 4-6 mm, elongate, subcylindrical, convex, shiny, glabrous. Quite shiny black, rarely more or less strongly dull; sometimes elytra with wide pale reddish humeral spot, seldom elytra quite reddish. Head with epistome gibbous, finely, regularly and densely punctured on disc, punctation subrugose distally; clypeus distinctly sinuate at middle, more or less distinctly angulate at sides, with upturned border near lateral angles; genae rounded, feebly more protruding than eyes; frontal suture tuberculate. Pronotum convex, doubly, sparsely and irregularly punctured, punctation lacking laterally at centre, rarely quite densely punctured; hind angles obtuse; base not bordered. Scutellum finely and sparsely punctured. Elytra elongate, subparallel-sided, feebly convex on disc; shoulder subdenticulate; striae deep, distinctly crenulate; interstices flat, finely and sparsely punctured, very rarely densely and coarsely punctured. Hind tibiae superior apical spur nearly as long as first tarsal segment; latter as long as following two combined. Male: frontal suture trituberculate, central tubercle more strong, lateral ones transverse; fore tibiae apical spur stout, obtusely rounded apically. Female: tubercles of frontal suture relatively weaker and transverse; fore tibiae apical spur slender and regularly acuminate apically.

DISTRIBUTION. Central and Southern Europe, Western Mediterranean Africa, Asia Minor, Central Asia, China.

Genus *NIMBUS* Mulsant & Rey, 1870

Aphodius (*Melinopterus* section *Nimbus*) Mulsant & Rey, 1870b (1869): 569.

Aphodius (*Nimbus*) Mulsant & Rey, 1871 (1870): 475; G. Dellacasa, 1983: 343.

Aphodius (*Nimbis*); Reitter, 1892: 231 (incorrect spelling).

Nimbus; Ádám, 1994: 15.

TYPE SPECIES: *Aphodius obliteratus* Panzer, 1823 (subsequent designation: Reitter, 1892).

DESCRIPTION. Small or medium size species (length 4-8 mm), oblong, moderately convex, usually strongly diffusedly grey-pubescent. Aeneo-blackish with metallic shine; head distally, pronotum at sides, elytra quite yellowish; latter cloudy blackish spotted. Head with epistome gibbous, flattened anteriorly, punctured and distinctly pubescent; clypeus faintly sinuate at middle, rounded at sides, distinctly bordered, border glabrous; genae sparsely and rather elongately ciliate, more protruding than eyes; latter medium sized; frontal suture more or less distinctly impressed, usually not tuberculate, rarely feebly tuberculate. Pronotum orbicular, distinctly punctured, usually more or less diffusedly pubescent; sides broadly rounded, ciliate or glabrous; base thinly bordered. Scutellum small, triangular, nearly impunctate. Elytra elongate, feebly convex; striae fine, more or less distinctly crenulate; interstices more or less strongly convex, widely pubescent and coarsely punctured. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with elongate spinules irregularly unequal. Pygidium with fine, rather sparse, elongate and almost straight pubescence; its apical margin with sparse and very elongate cilia. Sexual dimorphism shown in males by fore tibiae apical spur short and downward bent; by pronotum more sparsely and finely punctured on disc;

by more diffuse elytral pubescence. Aedeagus usually with elongate paramera, more or less strongly curved apically. Epipharynx transverse, faintly sinuate at anterior margin; epitorma bell-shaped; corypha with stout apical spiculae, central ones distinctly protruding beyond fore margin; pedia densely pubescent and with elongate spines subserially arranged laterally; chaetopariae dense, slender and moderately elongate.

DISTRIBUTION. Palearctic region.

Nimbus obliteratus (Panzer, 1823) (figs 683, 690-692)

Aphodius obliteratus Panzer, 1823: 3.

Aphodius (Nimbus) obliteratus; Mulsant & Rey, 1871 (1870): 475.

Nimbus obliteratus; Ádám, 1994: 15.

TYPE LOCALITY: Heidelberg [Germany].

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 5-6 mm, oblong, moderately convex, shiny, pubescent. Subaeneo-blackish; clypeal margin widely testaceous; pronotum yellowish at sides; elytra brown-yellow with suture narrowly blackish and with several blackish discal spots; sometimes elytral blackish spots shadowy either missing or, rarely, joined each other. Head shiny with epistome longitudinally feebly gibbous, on disc sparsely and finely punctured, anteriorly more coarsely punctured, punctures shortly straightly setigerous; clypeus faintly sinuate at middle, rounded at sides; genae acuminate, truncate before eyes, more protruding than eyes; frontal suture impressed, with vestiges of tubercles. Pronotum feebly convex, transverse, distinctly microreticulate, but rather shiny, doubly, sparsely and subregularly punctured, laterally and basally shortly sparsely pubescent; sides widely rounded, thickly bordered, border glabrous; base thinly but distinctly bordered. Scutellum elongate, obtuse apically, microreticulate, with few small and sparse punctures. Elytra feebly convex, subshiny, oval; striae fine, distinctly punctured, crenulate; interstices feebly convex, microreticulate, sparsely and more or less coarsely punctured, apically and laterally shortly, rather sparsely, straightly pubescent. Hind tibiae superior apical spur shorter than first tarsal segment; latter as long as following two combined. Male: epistome distally relatively more sparsely less coarsely punctured; pronotum on disc, simply, finely and superficially punctured; fore tibiae apical spur short, abruptly bent downward; middle tibiae inferior apical spur bifide apically. Female: epistome distally, relatively more coarsely, nearly rugosely punctured; pronotum doubly and relatively more densely coarsely punctured on disc; fore tibiae apical spur and middle tibiae inferior apical spur regularly acuminate apically.

DISTRIBUTION. Central and Southern Europe.

Genus *NIPPONAPHODIUS* Nakane, 1959 **stat. nov.**

Aphodius (Nipponaphodius) Nakane, 1959: 32; Balthasar, 1964: 314 (as doubtful synonym of *Trichonotulus*); M. Dellacasa, 1989 (1988): 169 (as doubtful synonym of *Agrilinus*).

TYPE SPECIES: *Aphodius gotoi* Nomura & Nakane, 1951 (original designation).

DESCRIPTION. Rather small species (length about 5 mm), oval-elongate, convex,

sericeous; head on front only, pronotum, scutellum and elytra with extremely short pubescence. Dark brownish. Head with epistome gibbous, densely punctured; clypeus sinuate at middle, obtusely rounded at sides, thinly bordered, border shortly bristled; genae obtusely rounded, ciliate, more protruding than eyes; latter medium sized; frontal suture trituberculate. Pronotum transverse; densely and regularly punctured; lateral margins and base bordered; hind angles subtruncate. Scutellum small, triangular. Elytra not denticulate at shoulder, striae deeply punctured, crenulate; first one as wide as second apically; interstices feebly convex, densely punctured. Fore tibiae distally tridentate and proximally serrulate at outer margin. Middle and hind tibiae with rather strong transverse carinae on outer face; apically fimbriate with elongate and irregularly unequal spinules. Pygidium with several elongate pale setae on apical margin and someone on disc. Sexual dimorphism probably shown in males (females are unknown to authors) by more distinct tubercles at frontal suture. Aedeagus with paramera stout and apically rounded. Epipharynx bisinuate at anterior margin; epitorma drop-shaped; corypha with six stout apical spiculae; pedia pubescent with some stouter spines mixed; chaetopariae rather slender.

DISTRIBUTION. Japan.

REMARKS. *Nipponaphodius* is easily separated from *Trichonotulus* by frontal suture tuberculate and triangular scutellum. It seems to be systematically close to *Agrilinus* but hind tibiae have apical spinules strongly unequal, scutellum less wide and upper side entirely and very shortly pubescent.

Nipponaphodius gotoi (Nomura & Nakane, 1951) **n. comb.** (figs 693-695, 696)

Aphodius (*Tristaphodius*) *gotoi* Nomura & Nakane, 1951: 41.

Aphodius (*Nipponaphodius*) *gotoi*; Nakane, 1959: 32.

Aphodius (? *Trichonotulus*) *gotoi*; Balthasar, 1964: 318.

Aphodius (? *Agrilinus*) *gotoi*; M. Dellacasa, 1988a (1987): 296.

TYPE LOCALITY: Mt. Nekodake, Sugadaira [Japan].

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length about 5 mm, oblong, convex, sericeous; extremely shortly pubescent, only epistome glabrous. Brown-blackish, pronotum disc brown-reddish. Head with epistome feebly gibbous, punctured, punctation rather fine, dense, a bit sparser at centre; clypeus feebly widely sinuate at middle, obtusely rounded at sides, finely bordered, border feebly upturned anteriorly and quite shortly bristled; genae obtusely rounded, ciliate, more protruding than eyes; frontal suture slightly raised, with three rather feeble tubercles. Pronotum transverse, with a feeble narrow median longitudinal groove; simply punctured; medium size regular punctation very densely scattered throughout; nearly parallel-sided; sides subsinuate before hind angles; propleura elongately ciliate, cilia distinctly visible from above. Scutellum microreticulate; at base nearly as wide as first two interstices. Elytra regularly oval; not denticulate at shoulder; deeply striate; striae widened toward apex and distinctly crenulate; interstices feebly convex, rowly finely densely punctured. Fore tibiae apical spur regularly acuminate toward apex. Hind tibiae superior apical spur as long as first tarsal segment; latter a bit

longer than following two combined. Male: median tubercles of frontal suture more strongly raised, bifid at tip, the lateral ones weaker. Female: unknown to authors.

DISTRIBUTION. Japan.

REMARKS. We had the opportunity to examine only one male specimen from Kawakami, Minamisaku, Nagano. The taxon results to be an obligatory cleptocoprid utilizing the brood masses of *Copris ochus* Motschulsky, 1860 and *Copris pecuarius* Lewis, 1884 (Kiuchi, 1987: 21-23).

Genus *NOBIUS* Mulsant & Rey, 1870

Aphodius (*Nobius*) Mulsant & Rey, 1870b (1869): 563; G. Dellacasa, 1983: 358.

Nobius; Paulian, 1942: 86; Ádám, 1994: 14.

Aphodius (*Aphodius* Artengruppe *Nobius*); Endrödi, 1960b: 206.

Aphodius (Artengruppe *Nobius*); Endrödi, 1964a: 288.

Aphodius (group *Nobius*); Endrödi & Rakovič, 1981: 55.

TYPE SPECIES: *Scarabaeus serotinus* Panzer, 1799 (subsequent designation: Paulian, 1942).

DESCRIPTION. Small size species (length 3-5 mm), elongate, convex, shiny, glabrous. Blackish or brownish; elytra usually yellowish or reddish with wide discal spot blackish. Head with epistome either feebly gibbous or flat, finely punctured, punctation distally subrugose; clypeus feebly or faintly sinuate at middle, rounded at sides, thickly bordered, border upturned and glabrous; genae rounded, sparsely and rather elongately ciliate, feebly more protruding than eyes; latter medium sized; frontal suture usually not tuberculate. Pronotum densely and irregularly punctured; hind angles either obtuse or rounded; base thinly bordered. Scutellum small, triangular, more or less diffusedly punctured. Elytra oblong; striae distinctly punctured, usually crenulate; interstices flat, sometimes microreticulate, finely sparsely punctured. Fore tibiae distally tridentate and proximally faintly crenulate at outer margin; inferior carina with distinct proximal tooth; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with stout and irregularly unequal spinules. Pygidium with fine, rather dense and recumbent pubescence, mixed few straight and elongate setae; its apical margin elongately and rather densely ciliate. Sexual dimorphism shown in males by epistome finely and superficially punctured; by pronotum not narrowed frontwardly; by elytra subparallel-sided and by metasternal plate relatively more excavate at middle. Aedeagus usually with paramera short, not membranous and more or less strongly curved apically. Epipharynx distinctly sinuate at front margin; epitorma conical; corypha with short protruding spiculae; pedia irregularly pubescent, with short sparse spines; chaetopariae rather short and densely arranged.

DISTRIBUTION. Palearctic region.

Nobius serotinus (Panzer, 1799) (figs 697, 700-702)

Scarabaeus serotinus Panzer, 1799: n. 2.

Aphodius serotinus; Creutzer, 1799: 61.

Aphodius (*Nobius*) *serotinus*; Mulsant & Rey, 1870b (1869): 567; Balthasar, 1964: 275.

Nobius serotinus; Paulian, 1942: 86; Ádám, 1994: 14.

TYPE LOCALITY: "Viennae, Austriae" [Austria].

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 4-5 mm, oval-elongate, moderately convex, shiny, glabrous. Blackish; front angles of pronotum reddish; elytra pale red-brownish with suture narrowly darker and wide elongate discal spot piceous, moreover with a transverse small piceous preapical spot; sometimes clypeal margin widely red-yellowish. Head with epistome feebly gibbous, more or less coarsely and densely punctured; clypeus faintly sinuate at middle, rounded at sides; genae widely rounded, barely more protruding than eyes; frontal suture finely impressed. Pronotum convex, shiny, rather distinctly microreticulate, doubly, rather coarsely and densely punctured; hind angles obtusely rounded; sides distinctly bordered, sparsely shortly ciliate; base very thinly bordered. Scutellum broad, distinctly microreticulate, sparsely and irregularly punctured on basal half. Elytra convex, elongate, strongly shiny; striae fine, rather deep, distinctly punctured, feebly crenulate; interstices nearly flat, very finely and sparsely punctured, distinctly microreticulate, sometimes apically very shortly and sparsely pubescent. Hind tibiae superior apical spur shorter than first tarsal segment; latter as long as following three combined. Male: epistome distally, finely and superficially punctured; elytra subparallel-sided; frontal suture distinct, feebly gibbous at middle; pronotum nearly parallel-sided; metasternal plate excavate. Female: epistome distally, relatively more coarsely and densely punctured; frontal suture faintly impressed, not at all gibbous; pronotum narrowed frontward, relatively more coarsely and densely punctured on disc; elytra somewhat widened posteriorly; metasternal plate flat.

DISTRIBUTION. Central and South-eastern Europe, Siberia.

Genus *NOLICUS* Petrovitz, 1962 **stat. nov.**

Aphodius (*Nolicus*) Petrovitz, 1962: 124; M. Dellacasa, 1988a (1987): 245.

Aphodius (group *Nolicus*); Endrödi & Rakovič, 1981: 47.

TYPE SPECIES: *Aphodius veteranus* Petrovitz, 1962 (original designation).

DESCRIPTION. Medium size species (length 5.5-7 mm), oval-elongate, moderately convex, shiny, glabrous. More or less pale testaceous, head and pronotum darker. Head with epistome strongly gibbous, punctured; clypeus sinuate at middle, rounded at sides, thinly bordered, border upturned and shortly bristled; genae shortly ciliate, more protruding than eyes; latter medium sized; frontal suture impressed, tuberculate at middle. Pronotum transverse, doubly and sparsely punctured; subparallel-sided toward base; lateral margin thickly bordered; hind angles obliquely truncate, somewhat sinuate; base bisinuate, not bordered. Scutellum small, triangular but sides shortly parallel near base. Elytra not denticulate at shoulder, faintly flattened apically; striae fine, punctured, subcrenulate, not joined each other apically; first stria slightly wider than second at apex; interstices feebly convex, punctulate. Fore tibiae distally tridentate and proximally serrulate or not at outer margin; upper side finely and sparsely punctured. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with elongate and irregularly unequal

spinules. Abdominal sternites with a transverse belt of punctures elongately setigerous. Pygidium with several elongate setae at distal margin. Sexual dimorphism shown in males by median tubercle of frontal suture relatively stronger; by epistome and pronotum less densely punctured; latter more transverse. Aedeagus with rather slender and elongate paramera, widened and membranous apically. Epipharynx transverse, anterior margin bisinuate; epitorma drop-shaped; corypha with six strong apical spiculae; pedia pubescent with some strong spines mixed; chaetopariae rather slender and elongate.

DISTRIBUTION. Afrotropical region.

REMARKS. Several African species nowadays considered as pertaining to *Pharaphodius* might be ascribed to this genus-group taxon.

Nolicus veteranus (Petrovitz, 1962) **n. comb.** (figs 698, 703-705)

Aphodius (*Nolicus*) *veteranus* Petrovitz, 1962: 124.

Aphodius (*Cinacanthus*) *rakovici* Endrödi, 1980: 36.

Aphodius (group *Nolicus*) *veteranus*; Endrödi & Rakovič, 1981: 47.

Aphodius (*Nolicus*) *rakovici*; M. Dellacasa, 1988a (1987): 339 (as synonym of *veteranus*).

TYPE LOCALITY: Karuman, Südöstliche Kalahari [South Africa].

TYPE DEPOSITORY: Georg Frey collection, Naturhistorische Museum. Basel (holotype male not examined).

DESCRIPTION. Length 6.5-7.5 mm, oval-elongate, moderately convex, shiny, glabrous. Brown-yellowish; front, pronotum disc, scutellum sides and elytral suture dark brown. Head with epistome distinctly gibbous, doubly punctured; smaller punctures sparse and rather regular; large punctures, twice to three times larger than small punctures, very sparse, irregular and scattered laterally only; clypeus feebly sinuate at middle, widely rounded at sides, thinly bordered, border upturned and quite shortly bristled; genae obtusely angulate, ciliate, more protruding than eyes; frontal suture finely impressed; front doubly punctured, larger punctures scattered laterally only. Pronotum transverse, doubly punctured; smaller punctures very fine and sparse; large punctures, five to eight times larger than small punctures, very sparse on disc and few dense laterally; sides and hind angles rather thickly bordered; latter feebly but distinctly sinuate; base bisinuate, not bordered. Scutellum smooth, with median longitudinal groove on basal half. Elytra with striae superficially punctured, subcrenulate, feebly widened toward apex; interstices slightly convex, microreticulate and very finely punctured. Fore tibiae apical spur regularly acuminate toward apex. Male: median tubercle of frontal suture relatively stronger; pronotum transverse, nearly smooth on disc; middle tibiae inner apical margin with an elongate acuminate lobe, their apical spurs regularly outward curved; hind tibiae superior apical spur somewhat longer than first tarsal segment; latter, inferiorly fringed with row of short dense hairs, longer than following three combined. Female: median tubercle of frontal suture relatively weaker; pronotum relatively less sparsely punctured on disc too, narrowed frontward; middle tibiae normally shaped apically; hind tibiae superior apical spur distinctly longer than first tarsal segment; latter as long as following three combined.

DISTRIBUTION. Austral Afrotropical region (South Kalahari and Namibia, Kaokoveld).

REMARKS. The study of paratypes, male and female, of *Aphodius rakovici* Endrödi, 1980 and one paratype male of *Aphodius veteranus* from Petrovitz collection, allows to confirm their synonymy as already stated by M. Dellacasa (1988a).

Genus *OBAPHODIUS* Bordat, 1988 **stat. nov.**

Aphodius (Obaphodius) Bordat, 1988: 58.

TYPE SPECIES: *Aphodius silvestris* Bordat, 1988 (original designation).

DESCRIPTION. Small size species (length 4-4.5 mm), rather stout, convex, quite shortly pubescent; shiny, elytral striae dull. Piceous. Head with epistome nearly flat, punctured; clypeus anteriorly subtruncate, rounded at sides, thinly bordered, border glabrous; genae subauriculate, ciliate, faintly more protruding than eyes; latter medium sized; frontal suture distinct, not tuberculate. Pronotum transverse, coarsely punctured; hind angles rounded; base not bordered; basal margin at middle with a row of setae. Scutellum small, triangular. Elytra not denticulate at shoulder; striae wide largely and transversely punctured; interstices acutely carinate at middle. Fore tibiae tridentate and proximally serrulate at outer margin, upper side very finely and sparsely punctured. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with short and equal spinules. Sexual dimorphism probably shown in males (females unknown) by aberrantly elongate apical spur of fore tibiae. Aedeagus with paramera elongate and regularly curved toward apex. Epipharynx transverse; front margin not sinuate; epitorma conical; corypha with six apical spiculae, the median two strongly elongate; chaetopariae rather slender; pedia sparsely pubescent with some stouter spines mixed.

DISTRIBUTION. Afrotropical region.

Obaphodius silvestris (Bordat, 1988) **n. comb.** (figs 699, 706-708)

Aphodius (Obaphodius) silvestris Bordat, 1988: 58

TYPE LOCALITY: Dwesa forest, Transkei, South Africa.

TYPE DEPOSITORY: Transvaal Museum. Pretoria (holotype male examined).

DESCRIPTION. Length 4.2 mm, stout, convex, quite shortly pubescent; shiny, elytral striae dull. Brown-blackish, clypeal margin and fore angles of pronotum brown-reddish. Head with epistome nearly flat, distinctly microreticulate so sericeous, regularly, coarsely and densely punctured, each puncture straightly and shortly setigerous, setae slightly backward recumbent; clypeus anteriorly subtruncate, obtusely rounded and feebly upturned at sides; genae feebly auriculate, rounded, faintly more protruding than eyes; frontal suture thinly carinate, shiny, more raised and thickened laterally; front with coarser setigerous punctation but not microreticulate. Pronotum simply, almost regularly, rather coarsely and densely punctured; rounded at sides; latter narrowly slightly explanate; lateral margins fringed by short pale cilia; hind angles faintly explanate; base not bordered, distinctly bisinuate, shortly ciliate, cilia straight and slightly longer near hind angles. Scutellum with some irregular and superficial punctures. Elytra with lateral margins distinctly explanate; plica epipleuralis shortly bristled; shoulder and basal third of epipleura rather elongately

ciliate; striae wide, deep, microreticulate at bottom, their punctures large and transverse, feebly crenulate on disc; at base and laterally, striae less wide but strongly crenulate; interstices narrowly microreticulate at sides, carinate at middle, carina shiny at tip and with a longitudinal row of shortly setigerous punctures at each side, setae almost straight; at elytral apex the sculpture of interstices is confuse but setae are always present. Hind tibiae superior apical spur a quarter shorter than first tarsal segment; latter slightly longer than following three combined. Male: apical spur of fore tibiae aberrantly elongate, feebly sinuate and faintly curved inward apically. Female: unknown.

DISTRIBUTION. The species is known from type locality only

Genus *ORODALISCOIDES* A. Schmidt, 1913 **stat. nov.**

Aphodius (Orodaliscoides) A. Schmidt, 1913: 145; M. Dellacasa, 1988a (1987): 388; G. Dellacasa & Gordon, 1997: 368

TYPE SPECIES: *Aphodius rugosiceps* Harold, 1859 (subsequent designation: M. Dellacasa, 1988).

DESCRIPTION. Medium size species (length 5-7 mm); very elongate, convex, shiny, nearly glabrous. Piceous-reddish with paler elytra. Head with epistome gibbous, subrugosely punctured; clypeus feebly sinuate at middle, rounded at sides, thickly bordered, border glabrous and feebly upturned distally; genae obtusely rounded, elongately ciliate, more protruding than eyes; latter medium sized; frontal suture distinct but not tuberculate. Pronotum transverse, strongly convex, regularly rather densely punctured; sides rounded, bordered, border elongately ciliate; hind angles obtusely rounded; base quite distinctly bordered. Scutellum small, triangularly widened. Elytra elongate, convex; striae deep, not or feebly crenulate; interstices moderately convex; sparsely but distinctly punctured, sparsely pubescent laterally and toward apex. Fore tibiae with four or three distal teeth and proximally faintly serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with spinules rather stout but irregularly unequal. Pygidium finely, irregularly and sparsely granulose, each granule with a recumbent and irregularly elongate seta; its apical margin with few, dense and moderately elongate cilia. Sexual dimorphism shown in males by fore tibiae apical spur stouter and obtusely truncate apically; by relatively more sparse punctation of pronotum and by metasternal plate more distinctly grooved. Aedeagus short and stout; paramera strongly curved and acuminate apically. Epipharynx widely transverse; anterior margin inwardly arcuate and with a belt of strong spinules; epitorma conical and elongate, basally widened; corypha strongly prominent and with two median and four apical short spiculae; pedia pubescent with rather elongate spines mixed; chaetopariae rather dense and elongate.

DISTRIBUTION. Neotropical region.

Orodaliscoides rugosiceps (Harold, 1859) **n. comb.** (figs 709, 713-715)

Aphodius rugosiceps Harold, 1859: 213

Aphodius (Orodaliscoides) rugosiceps; A. Schmidt, 1913: 145; G. Dellacasa & Gordon, 1997: 370 (lectotype designation)

TYPE LOCALITY: "Chili" [Chile].

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (lectotype male examined).

DESCRIPTION. Length 5-7 mm; very elongate, convex, shiny; nearly glabrous, elytra sparsely pubescent laterally and toward apex. Piceous-reddish, elytra paler. Head with epistome gibbous, microreticulate, subrugosely punctured; clypeus feebly sinuate at middle, rounded at sides; genae ciliate, obtusely rounded, distinctly more protruding than eyes; frontal suture distinct, not tuberculate. Pronotum transverse, strongly convex, rather densely and regularly punctured; sides bordered, elongately ciliate; hind angles obtuse; base distinctly bordered. Scutellum wide, with curved sides and with few sparse and superficial punctures. Elytra very elongate, strongly convex, at sides and toward apex sparsely but distinctly pubescent; striae deep, distinctly punctured, subcrenulate; interstices moderately convex, distinctly and sparsely punctured, the second widened toward apex; epipleura elongately sparsely ciliate. Hind tibiae superior apical spur slightly longer than first segment of tarsi. Male: fore tibiae apical spur stout, obtusely truncate apically, inferior carina with a distinct tooth distally, outer margin with four teeth, the fourth bifid; pronotum regularly transverse, relatively more convex and more sparsely punctured on disc; metasternal plate with deep median longitudinal groove; first segment of hind tarsi as long as following three combined. Female: fore tibiae apical spur slender and regularly acuminate apically, inferior tibial carina without distal tooth, outer margin with three teeth only; pronotum narrowed anteriorly, relatively less convex and more densely punctured on disc; metasternal plate superficially grooved at middle; first segment of hind tarsi shorter than following three combined.

DISTRIBUTION. Peru, Chile.

Genus *ORODALISCUS* Reitter, 1900 **stat. nov.**

Aphodius (*Orodaliscus*) Reitter, 1900: 84

TYPE SPECIES: *Aphodius rotundangulus* Reitter, 1900 (monotypy).

DESCRIPTION. Medium size species (length 5-7 mm), oval-elongate, convex, rather shiny, glabrous or nearly glabrous. Head and pronotum piceous, elytra reddish. Head with epistome feebly convex, coarsely punctured; clypeus widely and moderately sinuate at middle, either angulate or subdenticulate at sides, thinly bordered, border distally upturned and laterally ciliate; genae rounded, subauriculate, ciliate, faintly more protruding than eyes; latter rather small; frontal suture cariniform, at middle and laterally more or less distinctly raised, not tuberculate. Pronotum transverse; regularly, rather densely punctured; rounded sides distinctly bordered; hind angles quite broadly rounded; base thinly bordered. Scutellum small, pentagonal with sides parallel toward base. Elytra not denticulate at shoulder; finely punctato-striate; striae crenulate; interstices flat, punctulate. Fore tibiae distally tridentate and proximally not serrulate at outer margin; upper side sparsely, irregularly but distinctly punctured. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with elongate and irregularly unequal spinules. Pygidium with dense, irregularly elongate and straight

pubescence; its apical margin densely and elongately ciliate. Sexual dimorphism shown in males mainly by fore tibiae apical spur falciform and downward bent. Aedeagus with very elongate, slender paramera, apically curved and acuminate. Epipharynx transverse, with anterior margin bisinuate, widely rounded at sides; epitorma broadly drop-shaped; corypha with strong and protruding apical spiculae; pedia nearly glabrous, with several short stout spines sparsely scattered; chaetopariae moderately elongate and rather sparsely arranged.

DISTRIBUTION. Eastern and Central Palearctic region.

Orodeliscus rotundangulus (Reitter, 1900) **n. comb.** (figs 710, 716-718)

Aphodius (*Orodeliscus*) *rotundangulus* Reitter, 1900: 84

TYPE LOCALITY: "Russia m., Charkow" [Ukraine].

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 5-7 mm, more or less oval-elongate, moderately convex, shiny, glabrous. Piceous; clypeal margin and front angles of pronotum shadowy reddish, elytra more or less dark red. Head with epistome feebly convex, densely and coarsely punctured, punctation somewhat confuse and subconfluent; clypeus widely but moderately sinuate at middle, angulose at sides; genae rounded, faintly auriculate, not or faintly more protruding than eyes; frontal suture cariniform more or less distinctly raised at middle and laterally, not tuberculate. Pronotum transverse, simply, distinctly, regularly and rather densely punctured; punctures somewhat sparser on disc and lacking on short median longitudinal areola; sides rounded, rather thickly bordered, sparsely but distinctly ciliate; hind angles quite broadly rounded; base feebly bisinuate, thinly bordered. Scutellum apically acuminate, feebly sunk, superficially and sparsely punctured. Elytra elongate, not denticulate at shoulder, rather superficially striate; striae finely punctured but distinctly crenulate; interstice flat, rather finely, sparsely but distinctly and nearly regularly punctured. Hind tibiae superior apical spur shorter than first tarsal segment; latter longer than following two combined. Male: shape oval-elongate; epistome relatively less coarsely punctured; pronotum disc with sparser punctation; fore tibiae more slender, their apical spur falciform and downward bent. Female: shape widely oval; epistome relatively more strongly and coarsely punctured; pronotum disc with more dense punctation; fore tibiae stouter, their apical spur straight.

DISTRIBUTION. South-eastern Europe (Poland, Bulgaria, Ukraine), Central Asia (Kazakhstan).

Genus *OROMUS* Mulsant & Rey, 1870

Aphodius (*Aphodius* division *Oromus*) Mulsant & Rey, 1870b (1869): 435

Aphodius (*Oromus*); Mulsant & Rey, 1871 (1870): 474; Reitter, 1892: 201; G. Dellacasa, 1983: 361

Oromus; Ádám, 1994: 13

TYPE SPECIES: *Scarabaeus alpinus* Scopoli, 1763 (subsequent designation: Reitter, 1892)

DESCRIPTION. Medium size species (length 5-6 mm), oblong, convex, shiny, glabrous.

Blackish; elytra often reddish, rarely blackish spotted. Head with epistome punctured; clypeus sinuate at middle, rounded at sides, thinly bordered, border glabrous and upturned; genae rounded, ciliate, more protruding than eyes; latter medium sized; frontal suture tuberculate. Pronotum convex, transverse, punctured; sides bordered; base not bordered. Scutellum small, triangular, punctured. Elytra oval, convex, more or less shiny; shoulder with small but distinct denticle; striae fine, crenulate; interstices flat, punctured. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with spinules short, stout, somewhat irregularly equal. Pygidium with some sparse and moderately elongate setae; its apical margin finely, sparsely and very elongately ciliate. Sexual dimorphism shown in males by more strongly tuberculate frontal suture and by pronotum not frontwardly narrowed. Aedeagus rather stout; paramera short, curved and acuminate apically. Epipharynx feebly sinuate at front margin, widely rounded at sides; epitorma drop-shaped, elongate; corypha with apical spiculae more or less protruding; pedia pubescent toward apex of epitorma only and with short and stout spines irregularly sparse; chaetopariae short and densely arranged.

DISTRIBUTION. Palearctic region

Oromus alpinus (Scopoli, 1763) **n. comb.** (figs 711, 719-721)

Scarabaeus alpinus Scopoli, 1763: 9

Aphodius rubens Comolli, 1837: 23

Aphodius alpinus; Erichson, 1848: 829

Aphodius (Oromus) rubens Comolli; Mulsant & Rey, 1870b (1869): 435

Aphodius (Oromus) alpinus; Reitter, 1892: 201

TYPE LOCALITY: "Alpibus Vochinensibus, Carnioliae super." [Austria].

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 5-6 mm, oblong, convex, shiny, glabrous. Blackish; elytra apically shadowy reddish; sometimes elytra either pale reddish or blackish; rarely elytra brown-reddish with suture and several cloudy irregular spots blackish. Head with epistome gibbous, coarsely, distally rugosely punctured; clypeus feebly sinuate at middle, rounded at sides; genae rounded, feebly auriculate, more protruding than eyes; frontal suture tuberculate. Pronotum convex, transverse, strongly shiny; doubly, irregularly, coarsely and densely punctured; sides distinctly bordered and more or less distinctly sinuate before hind angles; latter obtusely rounded; basal border more or less widely interrupted at middle. Scutellum wide, coarsely and densely punctured basally. Elytra oval, regularly convex, shiny; striae rather deep, feebly crenulate; interstices flat or faintly convex, distinctly and sparsely punctured, punctation coarser apically. Hind tibiae superior apical spur shorter than first tarsal segment; latter as long as following three combined. Male: tubercles of frontal suture relatively stronger, central one apically acuminate; pronotum not narrowed frontward, distinctly sinuate laterally before hind angles. Female: tubercles of frontal suture relatively weaker; pronotum narrowed frontward, barely sinuate before hind angles.

DISTRIBUTION. Central and Southern Europe montane areas (Pyrénées, Jura, Vosges, Massif Central, Alps, Carpathians).

Genus *OSMANIUS* Branco & Baraud, 1988

Osmanius Branco & Baraud, 1988 (1987): 33

TYPE SPECIES: *Paracoptochirus balthasari* Petrovitz, 1963 (original designation).

DESCRIPTION. Rather small species (length 4-5.5 mm), elongate, moderately convex, shortly pubescent; head and pronotum shiny, elytral striae dull. Blackish. Head with epistome convex, roughly punctured and shortly pubescent; clypeus sinuate at middle, rounded at sides, thinly bordered, border shortly bristled; genae obtusely rounded, ciliate, more protruding than eyes; latter rather small; frontal suture finely impressed, not tuberculate. Pronotum subquadrate, regularly roughly punctured and quite pubescent; sides thickly bordered, bristled, sinuate before hind angles; latter S-shaped; base not bordered, ciliate, deeply bisinuate, laterally acutely lobate at level of elytral shoulder. Scutellum small, triangular, with curved sides. Elytra oval-elongate; denticulate at shoulder; with nine deep, biserially punctured striae strongly microreticulate so dull; interstices carinate at middle, doubly and serially punctured at sides, punctures obliquely setigerous. Fore tibiae proximally serrulate at outer margin; upper side smooth. Middle and hind tibiae with rather feeble transverse carinae on outer face; apically fimbriate with elongate and irregularly unequal spinules. Pygidium rather sparsely and shortly pubescent; its apical margin sparsely and very elongately ciliate. Sexual dimorphism shown in males mainly by fore tibiae distinctly widened inward, their apical spur extremely reduced, not visible from above, distal outer tooth straightly truncate anteriorly; middle tibiae lacking of inferior apical spur. Aedeagus with paramera short and more or less rounded apically. Epipharynx widely curved inward at fore margin, rounded at sides; epitorma subconical, not reaching the fore margin; corypha with strong apical spiculae, the two central ones strongly protruding beyond anterior margin; pedia shortly and densely pubescent close to corypha, mixed some stouter spines subserially arranged; chaetopariae moderately elongate and somewhat sparse.

DISTRIBUTION. Libya, Turkey, Iran.

REMARKS. Branco & Baraud (1988) created the genus *Osmanius* ascribing to it three species: *balthasari* (Petrovitz, 1963), from Turkey; *dellacasai* (Petrovitz, 1970), from Libya and *persicus* Branco & Baraud, 1988, from Iran.

The discriminant characters selected in original diagnosis for distinguishing *Osmanius* from *Paracoptochirus* were essentially based either on apically trilobate or normally shaped aedeagus and either on the presence or absence of the tenth elytral interstice.

We have verified on several specimens of *Osmanius balthasari* that the membranous inner process at apex of each paramerum becomes evidently widened when endophallus has to be everted giving, when placed one on the top of the other, a false trilobate aspect to the apex of aedeagus when viewed from above. This is the appearance of the aedeagus of the type specimen, preserved in Geneva Museum, that one of us (Bordat) had the opportunity to study.

On the other hand, Branco & Baraud (1984) in a remarkable work, highlighted three phyletic lines among the species pertaining to the genus *Heptaulacus*. These lines are defined by the reduction or disappearance of the seventh and eighth elytral interstices (the tenth is always lacking).

Applying this concept to taxa pertaining to the genera *Osmanius* and *Paracoptochirus* it is possible to remark that they present a sequence of said feature identical to that of *Heptaulacus* species. Obviously it results an improper utilization of this discriminating character at genus-group level for *Osmanius* and *Paracoptochirus* and at species-group level for *Heptaulacus*.

Nevertheless we retain that some significant differences shown by habitus and particularly by sexual dimorphism might allow to maintain, at least for the time being *Osmanius* and *Paracoptochirus* as self-standing genera.

Osmanius balthasari (Petrovitz, 1963) (figs 712, 726-728)

Paracoptochirus balthasari Petrovitz, 1963a: 244

Osmanius balthasari; Branco & Baraud, 1988 (1987): 33

TYPE LOCALITY: "zwischen Iskenderun und Belen" [Turkey].

TYPE DEPOSITORY: Muséum d'Histoire naturelle. Geneva (holotype male examined).

DESCRIPTION. Length 4-5.5 mm, elongate, subparallel, moderately convex, shortly pubescent; head and pronotum shiny; elytra, except shiny median carinae of interstices, dull. Dark brown, legs paler. Head with epistome convex, superficially microreticulate, roughly rather sparsely punctured; punctures shortly setigerous, setae backward recumbent; clypeus distinctly sinuate at middle, rounded at sides; genae obtusely rounded, more protruding than eyes; frontal suture finely impressed, not tuberculate; front coarsely and densely punctured, toward fore margin of pronotum with a transverse belt of contiguous setigerous punctures, rather long setae abruptly backward recumbent. Pronotum subquadrate, quite regularly and roughly punctured, punctures with rather elongate setae backwardly recumbent; sides regularly rounded up to the half, then sinuate before S-shaped truncate hind angles; lateral margins distinctly bordered and shortly bristled, bristles backward curved. Base rounded at middle, deeply bisinuate and laterally acutely lobate at level of elytral shoulders, not bordered but distinctly ciliate, cilia slightly longer near hind angles. Scutellum concave, strongly microreticulate, faintly and sparsely punctured. Elytra oval-elongate, with small but distinct humeral denticle; with nine rather deep striae, faintly wider than interstices, strongly microreticulate at bottom so dull, with two longitudinal rows of near alternately biseriate, strong punctures; elytral interstices almost narrowly carinate at middle, laterally with row of irregular and setigerous punctures, setae obliquely backward recumbent and with a more or less raised, thin and shiny border interrupted by rather small and regular punctures; tenth and eighth interstices lacking, sixth reduced to a basal rudiment joined with seventh; latter and fifth shortened before apex; epipleura strong and shortly bristled, bristles backward curved. Fore tibiae with few, nearly faint proximal denticles at outer margin. Male: shape relatively slender; fore tibiae distinctly widened inward toward apex; their apical spur extremely reduced and placed inferiorly

at level of second outer tooth, and invisible from above; distal outer tooth straightly truncate anteriorly; middle tibiae inwardly lobate at apical margin, only with the superior apical spur; hind tibiae rather flattened, their superior apical spur as long as first tarsal segment; latter nearly as long as following three combined. Female: shape relatively wider; distal outer teeth normally shaped and with distinct, apical acuminate spur; middle tibiae not inwardly lobate at apical margin, with superior and inferior apical spurs; hind tibiae not flattened, their superior apical spur shorter than first tarsal segment; latter nearly as long as following two combined.

DISTRIBUTION. Central and Eastern Turkey.

REMARKS. Bionomically this rare species is associated with the rodent *Spermophilus citellus* (Linné, 1766), and was always collected into its burrows or nests in early spring only (Pittino, 1996: 355-360).

Genus *OTOPHORUS* Mulsant, 1842

Otophorus Mulsant, 1842: 172

Aphodius (groupe *Otophorus*); Bedel, 1911a: 62

Aphodius (*Otophorus*); G. Dellacasa, 1983: 364

Otophorus; Ádám, 1994: 13

TYPE SPECIES: *Scarabaeus haemorrhoidalis* Linné, 1758 (monotypy).

DESCRIPTION. Rather small species (length 4-5 mm) convex, moderately shiny, glabrous. Blackish, sometimes elytra with shoulder and apex reddish, rarely quite reddish. Head with epistome gibbous, strongly punctured; clypeus moderately sinuate at middle, rounded at sides, thickly bordered, border glabrous and feebly upturned; genae auriculate, shortly ciliate, barely more protruding than eyes; latter medium sized; frontal suture tuberculate. Pronotum convex, moderately shining, doubly punctured; hind angles sinuately truncate; base bordered. Scutellum large, triangularly elongate. Elytra short, subparallel-sided; striae deep and crenulate; interstices flat and punctured. Fore tibiae distally tridentate and proximally feebly serrulate at outer margin; upper side with few small punctures sparsely scattered. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with short and equal spinules. Pygidium faintly punctured, nearly glabrous. Sexual dimorphism shown in males by more strongly tuberculate frontal suture and by less coarsely punctured pronotum. Aedeagus strongly sclerotized, with paramera rounded apically. Epipharynx with anterior margin nearly straight, widely rounded at sides; epitorma subcylindrical toward front margin, widened basally; corypha with few strong apical spines, two lateral ones more elongate and distinctly protruding; prophobae dense and with several short spines irregularly scattered; chaetopariae stout and densely arranged.

DISTRIBUTION. Holarctic region, Mexican Transition Zone.

Otophorus haemorrhoidalis (Linné, 1758) (figs 722, 729-731)

Scarabaeus haemorrhoidalis Linné, 1758: 348

Otophorus haemorrhoidalis; Mulsant, 1842: 73; Ádám, 1994: 13

Aphodius haemorrhoidalis; Erichson, 1848: 800

Aphodius (*Teuchestes*) *haemorrhoidalis*; Reitter, 1892: 179; Landin, 1956b: 8 (type location)
Aphodius (groupe *Otophorus*) *haemorrhoidalis*; Bedel, 1911a: 62
Aphodius (*Otophorus*) *haemorrhoidalis*; G. Dellacasa, 1983: 365

TYPE LOCALITY: "Suecia" [Sweden] (conventionally restricted).

TYPE DEPOSITORY: Linnean Society collection. London (type not examined).

DESCRIPTION. Length 4-5 mm, short, strongly convex, moderately shiny; nearly glabrous, elytra apically faintly pubescent. Blackish; sometimes elytra more or less widely reddish either apically or, moreover, with a small rounded reddish humeral spot; or elytra blackish apically and reddish spotted at shoulder only, or with lateral margin reddish joining humeral and apical spots, or elytra entirely dark reddish. Head with epistome feebly gibbous, subrugosely punctured; clypeus feebly sinuate at middle, rounded at sides; genae auriculate, frontward directed, barely more protruding than eyes; frontal suture tuberculate. Pronotum moderately shiny, convex, doubly punctured; larger punctures feebly umbilicate, mixed with many much smaller ones; rounded at sides; hind angles sinuately truncate; base distinctly bisinuate and entirely bordered. Scutellum elongate, acuminate apically; coarsely punctured basally, smooth apically. Elytra short, strongly convex, subparallel-sided, apically feebly narrowed; striae deep and distinctly crenulate; interstices flat, sparsely and very finely punctured. Hind tibiae superior apical spur shorter than first tarsal segment; latter as long as following three combined. Male: median tubercle of frontal suture relatively stronger; pronotal punctation more sparse. Female: tubercles of frontal suture weaker, pronotal punctation relatively more dense.

DISTRIBUTION. Holarctic region; Mexican Transition Zone.

Genus *OXYAPHODIUS* Balthasar, 1965 **stat. nov.**

Aphodius (*Oxyaphodius*) Balthasar, 1965: 314

TYPE SPECIES: *Aphodius sikkimensis* Balthasar, 1965 (original designation).

DESCRIPTION. Medium size species (length 5.5-6.5 mm), oval-elongate, rather convex, strongly dull; sides of pronotum and elytral interstices shortly pubescent. Blackish. Head with epistome feebly gibbous, densely microreticulate thus strongly dull, rather regularly, superficially and confusedly punctured; clypeus slightly sinuate at middle, widely rounded at sides, thinly bordered, border upturned and very shortly bristled; genae obtuse, ciliate, strongly more protruding than eyes; latter rather small; frontal suture obsolete, not at all tuberculate. Pronotum transverse, rather convex, densely microreticulate thus strongly dull, doubly and almost confusedly punctured; larger punctures more superficial and faintly cariose, smaller ones deeper and shining; sides shortly pubescent, feebly rounded, thinly bordered, border shortly ciliate; hind angles obtusely rounded; base thinly but distinctly bordered. Scutellum small, triangularly elongate. Elytra regularly oval, not denticulate at shoulder; striae shiny, very deep and broad, subcrenulate, with transverse large punctures moderately impressed; interstices flat, densely microreticulate thus strongly dull, at each side with a longitudinal row of distinct and shortly setigerous punctures. Fore tibiae distally acutely tridentate and

proximally faintly serrulate at outer margin; upper side smooth and strongly shiny. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with short and equal spinules. Pygidium with dense and recumbent pubescence, mixed some straight elongate setae; its apical margin finely, sparsely and very elongately ciliate. Sexual dimorphism shown in males by fore tibiae apical spur relatively short, stouter and more distinctly outwardly curved; by metasternal plate distinctly excavate. Aedeagus rather stout, strongly sclerotized, with paramera elongate and apically rounded. Epipharynx transverse, nearly straight at fore margin, feebly rounded at sides; epitorma drop-shaped; corypha with rather short and stout apical spiculae; chaetopariae slender and elongate; pedia rather sparsely pubescent, with several lateral spines irregularly scattered.

DISTRIBUTION. South-eastern Palearctic region (Himalayan province).

Oxyaphodius sikkimensis (Balthasar, 1965) **n. comb.** (figs 723, 732-734)

Aphodius (*Oxyaphodius*) *sikkimensis* Balthasar, 1965: 314

TYPE LOCALITY: "Sikkim, Umgebung von Tumlong, 3200 m" [India].

TYPE DEPOSITORY: Balthasar collection, Národní Muzeum. Prague (holotype male examined).

DESCRIPTION. Length 5.5-6.5 mm; oval-elongate, moderately convex, nearly quite strongly dull; sides of pronotum and elytral interstices shortly pubescent. Blackish; antennal club piceous, legs dark brown-blackish with paler tarsi. Head with epistome densely microreticulate thus strongly dull but toward clypeal margin narrowly shiny, regularly, rather finely, almost densely but superficially and more or less confusedly punctured; clypeus feebly sinuate at middle, widely rounded at sides; genae obtusely rounded, elongately ciliate, distinctly more protruding than eyes; genal sutures slightly raised; frontal suture obsolete, only indicate by lateral feeble gibbosities; front more distinctly and coarsely punctured than epistome. Pronotum transverse, rather convex, densely and finely microreticulate thus nearly quite strongly dull excepted a rather shiny median, narrow, not at all impressed, longitudinal strip and a more or less wide belt near base; doubly, irregularly and rather superficially throughout punctured; larger punctures feebly cariose; smaller ones rather coarse and somewhat shiny; sides feebly rounded, shortly pubescent frontwardly and more widely toward base, thinly bordered, border shortly ciliate; hind angles obtusely rounded; base distinctly bisinuate, thinly but distinctly bordered, with a belt of narrowly contiguous and deeply impressed large punctures simulating a transverse groove. Scutellum somewhat raised at sides, strongly microreticulate thus quite dull, almost indistinctly punctured basally. Elytra regularly oval, not denticulate at shoulder, with shiny striae exceptionally broad and deep, with large transverse punctured moderately impressed, slightly crenulate; interstices flat, distinctly microreticulate thus dull, on disc somewhat wider than striae, at sides more widened, each interstice with a longitudinal and rather regular row of shortly setigerous punctures, setae almost straight; juxtasutural interstices moderately convex and shiny. Hind tibiae superior apical spur, somewhat flattened, outwardly angulate at middle and slightly hooked apically, somewhat shorter than first tarsal segment; latter as long as

following three combined. Male: fore tibiae apical spur relative shorter, stouter and more strongly curved outwardly; metasternal plate distinctly excavate. Female: fore tibiae apical spur relatively longer, slender and less strongly curved outwardly; metasternal plate nearly flat.

DISTRIBUTION. Nepal, Sikkim.

REMARKS. Besides the holotype we had the opportunity to examine two specimens (male and female) from Nepal (Thodung, 3200 m) collected on May 14th, 1992 by our friend G. Sabatinelli (Rome) preserved in Dellacasa's collection.

Genus *OXYCORYTHUS* Solsky, 1876

Oxycorythus Solsky in Fedtschenko, 1876: 395; G. Dellacasa & Poggi, 1992: 217

TYPE SPECIES: *Oxycorythus morawitzi* Solsky, 1876 (monotypy).

DESCRIPTION. Small size species (length 3.5-4.5 mm), elongate, convex, subparallel-sided, sericeous, widely pubescent. Male quite blackish; female blackish with clypeus and pronotum reddish. Head large; epistome subrugosely punctured; clypeus semicircular, more or less distinctly denticulate at middle, distinctly bordered; border upturned and rather elongately bristled; genae angulate, shortly ciliate, more protruding than eyes; latter rather large. Maxillary palps very slender in both sexes; their third segment strongly elongate and apically truncate. Mandibles strongly reduced. Pronotum transverse, convex, strongly punctured, with smooth shiny longitudinal raised area on disc; hind angles widely rounded; sides and base thinly bordered. Scutellum small, triangular and regularly curved at sides. Elytra elongate, subparallel-sided, distinctly quite pubescent; striae fine; interstices almost flat, with two lateral rows of strong punctures. Tibiae and tarsi slender and elongate. Fore tibiae distally strongly tridentate and proximally not serrulate at outer margin; upper side with few coarse punctures irregularly sparse. Middle and hind tibiae with rather feeble transverse carinae on outer face; apically fimbriate with short spinules of equal length. Pygidium with fine, sparse, elongate and recumbent pubescence; its apical margin with fine, rather sparse and moderately elongate cilia. Sexual dimorphism very evidently shown in males by more large head; by more distinct clypeal median tooth; by frontal suture without median tubercle; by fore tibiae apical spur sickle-shaped. Aedeagus strongly sclerotized, paramera moderately elongate, widened and acuminate apically. Epipharynx extremely small, rudimental, triangular, apically with few spinules frontwardly directed.

DISTRIBUTION. Central Asia.

Oxycorythus morawitzi Solsky, 1876 (figs 724, 735-737)

Oxycorythus morawitzi Solsky in Fedtschenko, 1876: 397; G. Dellacasa & Poggi, 1992: 218

TYPE LOCALITY: "In deserto ad fluminem Syr-daria" [Russia].

TYPE DEPOSITORY: Zoologiceskij Muzej, M. G. U. Moscow (type not examined).

DESCRIPTION. Length 3.5-4.5 mm; elongate, convex, subparallel-sided, sericeous, quite densely and shortly pubescent. Male blackish, outer margin of fore tibiae and tarsi reddish; antennae blackish with brownish club; frontal suture not at all tuberculate.

Female blackish, with clypeus, pronotum and apex of elytra reddish; frontal suture with small central tubercle. Male: head large, subtriangular, sericeous, irregularly and subrugosely punctured, finely microreticulate, sparsely shortly pubescent, hairs backward recumbent; clypeus semicircular, distinctly denticulate at middle, thinly bordered, border distinctly upturned anteriorly, with short yellowish bristles; epistome concave; frontal suture cariniform, smooth, somewhat interrupted; front with two oblique carinae combined with genal sutures; genae depressed, squarely truncate posteriorly, shortly ciliate, much more protruding than eyes. Pronotum transverse, convex, sericeous, almost regularly and strongly punctured, punctures umbilicate, larger bean-shaped on disc, somewhat rounded and irregularly scattered on sides, all distinctly pubescent, hairs elongate and dense on sides, shorter and more sparse on disc; median longitudinal wide area smooth and shiny; sides and base distinctly thinly bordered, latter feebly bisinuate; hind angles widely rounded. Scutellum coarsely and irregularly punctured. Elytra elongate, subparallel-sided, convex, flattened near scutellum, sericeous; epipleura strong, quite bristled; striae fine, distinctly impressed, feebly punctured; interstices smooth, flat on disc, distinctly convex preapically, with two lateral rows of strong haired punctures, subrugose apically, hairs backwardly recumbent, more elongate and dense preapically; elytral suture smooth, somewhat flattened, widened toward apex; apical angle widely rounded. Fore tibiae short and stout; outer margin distal teeth elongate and acuminate; apical spur large, sickle-shaped and strongly downwardly bent. Anterior tarsi slender, strongly elongate, four first segments almost of same length, fifth distinctly longer and with strong, elongate, basally angulate, claws. Middle and hind tibiae shorter than tarsi; densely ciliate and apically feebly widened. First segment of middle tarsi as long as middle tibiae superior apical spur and longer than inferior one; three following segments of the same length, each distinctly shorter than first one; fifth as long as first segment. Both apical spurs of middle tibiae closely placed at inner apical margin. Superior apical spur of hind tibiae shorter than first tarsal segment; fifth segment longer than other four ones combined, with elongate strong claws; inferior apical spur as long as first tarsal segment. Female: head relatively smaller, more shiny, more feebly microreticulate, punctation more distinct, more regular and more sparse; hairs shorter and more straight. Clypeus almost semicircular, median angle almost indistinct; genae relatively less strongly more protruding than eyes, less angulate; frontal suture somewhat faint, front with two oblique lateral, smooth, irregular and somewhat raised carinae, combined with genal sutures, and with a small conic central tubercle. Pronotum relatively more strongly convex, more shiny; punctation more regular, more scattered; almost all punctures regularly rounded, umbilicate; median longitudinal smooth area wider; pubescence usually shorter; base more distinctly bisinuate. Scutellum relatively more narrowed and elongate, more irregularly and superficially punctured. Elytra relatively more rounded posteriorly, striae more widened, more deeply impressed, more feebly punctured; interstices somewhat convex on disc, almost flat apically, superficially microreticulate, more shiny, with two lateral regular rows of haired strong punctures. Fore tibiae apical spur flattened, straight, truncate and feebly curved apically.

DISTRIBUTION. Turkmenistan, Uzbekistan, Tadzhikistan and Kirghizstan.

Genus *OXYOMUS* Dejean, 1833

Oxyomus Dejean, 1833: 163; Paulian, 1942: 99; G. Dellacasa, 1983: 483

Amidorinus W. Koshantschikov, 1912: 519; A. Schmidt, 1922: 378 (as synonym of *Oxyomus*)

TYPE SPECIES: *Scarabaeus sylvestris* Scopoli, 1763 (subsequent designation: Paulian, 1942).

DESCRIPTION. Small size species (length 3-4 mm), elongate, convex, nearly dull, either glabrous or with elytral interstices shortly pubescent. Blackish, sometimes elytra reddish. Head with epistome feebly convex, distinctly punctured; clypeus feebly sinuate at middle, rounded at sides, thinly bordered, border glabrous; genae obtusely rounded, very shortly ciliate, more protruding than eyes; latter rather small; frontal suture finely impressed or nearly obsolete, not tuberculate. Pronotum convex, transverse, with distinct median longitudinal groove shortened frontward and with two lateral faint oblique foveolae; more or less coarsely punctured on disc; sides bordered; base bordered or not. Scutellum small, triangular. Elytra slightly widened backward; shoulder usually denticulate; very widely sulcate, sulci with strongly deep, transverse and very large punctures; pseudinterstices narrow, costiform. Fore tibiae rather widened apically, distally tridentate and proximally faintly serrulate at outer margin; upper side smooth. Middle and hind tibiae with rather feeble transverse carinae on outer face; apically fimbriate with stout and irregularly unequal spinules. Pygidium with very short and recumbent pubescence; its apical margin with two straight cilia very elongate. Sexual dimorphism shown in males mainly by more strongly excavate and more strongly punctured metasternal plate. Aedeagus with feebly sclerotized paramera, rounded apically. Epipharynx feebly sinuate at anterior margin, widely rounded at sides; epitorma widely conical; corypha rounded, rather distinctly protruding and with several apical spiculae, the central ones much more elongate; pedia sparsely pubescent near epitorma, with short spines irregularly scattered; chaetoparia moderately elongate and densely arranged.

DISTRIBUTION. Subcosmopolitan.

REMARKS. We have not had the opportunity to study the type of *Amidorinus rosti* described by W. Koshantschikov in 1912 on a single female specimen from "Kulu, Beas Thal, 7000', Himalaya Gebirge" (probably preserved in Saint Petersburg Museum) so we herein doubtfully accepted its synonymy versus *Oxyomus miliaris* A. Schmidt, 1908, proposed by A. Schmidt (1922: 378, 385) himself.

As a matter of fact, W. Koshantschikov, in his original diagnosis, remarked that the type specimen of *Amidorinus rosti* is lacking of any trace of longitudinal median groove toward the base of pronotum as well as of lateral foveolae and therefore he stated that the taxon cannot pertain to the genus *Oxyomus*.

Oxyomus sylvestris (Scopoli, 1763) (figs 725, 738-740)

Scarabaeus sylvestris Scopoli, 1763: 5

Scarabaeus porcatus Fabricius, 1775: 20

Oxyomus porcatus; Dejean, 1833: 163

Oxyomus silvestris; Reitter, 1892 (incorrect spelling for *sylvestris* Scopoli, 1763); Paulian, 1942: 99

TYPE LOCALITY: "Carniolia" [Austria] (conventional).

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 3-4 mm, subelongate, convex, rather dull, glabrous. Blackish or brown-blackish; clypeus, pronotum and elytral margins shadowy reddish; sometimes brown-reddish with reddish elytra. Head with epistome feebly gibbous, downwardly recumbent frontward, distinctly punctured; clypeus feebly sinuate at middle, rounded at sides; genae obtusely angulate, distinctly more protruding than eyes; frontal suture nearly faint, feebly arcuate. Pronotum transverse, feebly convex, coarsely and nearly regularly punctured, punctures frontward slightly more superficial; basally with a belt of large contiguous punctures strongly impressed; with a median longitudinal groove shortened frontwardly and with two lateral faint oblique foveolae; sides bordered and feebly sinuate before hind angles; latter obtuse; base not bordered. Scutellum ogival, distinctly raised at middle. Elytra subparallel-sided, somewhat widened backward; shoulder strongly denticulate, denticle outward directed; pseudostriae very wide, deep, largely and transversely punctured; pseudointerstices rather narrow, costiform, somewhat shortened toward apex. Hind tibiae superior apical spur shorter than first tarsal segment; latter longer than following three combined. Male: metasternal plate relatively more strongly excavate and more densely punctured. Female: metasternal plate relatively less excavate and less densely punctured.

DISTRIBUTION. Europe, Asia Minor, Western and Central Asia, Northern America.

Genus *PARACOPTOCHIRUS* Balthasar, 1963

Paracoptochirus Balthasar, 1963: 277

Paracoptochirus; Branco & Baraud, 1988: 26

TYPE SPECIES: *Coptochirus singularis* Harold, 1868 (original designation).

DESCRIPTION. Medium size species (length 6.5-8 mm) oval-elongate, moderately convex, subshiny. Piceous, clypeus and elytral apex paler. Head with epistome feebly gibbous, anteriorly confusedly, toward frontal suture granulo-roughly punctured, punctures shortly setigerous; clypeus widely sinuate at middle, rounded at sides, rather thickly bordered, border shortly bristled; genae nearly quite rounded, ciliate, more protruding than eyes; latter medium sized; front coarsely and subregularly punctured, punctures setigerous. Pronotum flattened on disc, strongly convex at sides, roughly, rather densely punctured, punctures reniform, umbilicate, piligerous; sides thinly bordered, sinuate before hind angles; latter obliquely truncate, nearly S-shaped; base not bordered, ciliate, widely rounded at middle, strongly bisinuate, laterally rather acutely bilobate at level of elytral shoulders. Scutellum small, triangularly elongate. Elytra regularly oval; with or without humeral denticle; striae wide, feebly deep, not punctured; interstices slightly larger than striae, convex on disc, subcarinate toward apex, laterally with a longitudinal row of piligerous punctures, hairs obliquely backward recumbent; tenth interstice complete, eighth and sixth more or less strongly reduced, latter never joined with seventh even when reduced to a basal rudiment; epipleura thin, quite shortly ciliate. Fore tibiae proximally not serrulate at outer margin and widened inward in both sexes. Middle and hind tibiae

with strong transverse carinae on outer face; apically fimbriate with elongate and irregularly unequal spinules. Sexual dimorphism shown in males by fore tibiae lacking of apical spur and with distal outer tooth widely explanate and anteriorly straightly truncate; by middle tibiae lacking of inferior apical spur and with inner angle of apical margin lobate; by hind tibiae flattened and transversely broadened. Aedeagus with paramera distinctly shorter than tegmen, narrowed and regularly curved from base up to acute apex. Epipharynx feebly bisinuate at anterior margin, widely rounded at sides; epitorma drop-shaped; corypha with strong apical spiculae distinctly protruding beyond front margin; pedia finely pubescent with few stouter spines serially mixed; chaetopariae moderately elongate and rather sparsely arranged.

DISTRIBUTION. Balkan Peninsula and Asia Minor.

Paracoptochirus singularis (Harold, 1868) (figs 741-743, 744)

Coptochirus singularis Harold, 1868a: 396; A. Schmidt, 1922: 369

Coptochirus haemonius Reitter, 1903: 176; A. Schmidt, 1922: 369 (as synonym of *singularis* female)

Paracoptochirus singularis; Balthasar, 1963: 277; Branco & Baraud, 1988: 28

TYPE LOCALITY: "Costantinopel" [Istanbul, European Turkey]

TYPE DEPOSITORY: Zoologisches Museum, Humboldt Universität. Berlin (holotype male examined).

DESCRIPTION. Length 7-8 mm, oval-elongate, subshiny, moderately convex, shortly pubescent. Piceous-reddish, clypeal margin sides and apex of elytra paler; legs piceous, antennae reddish with brownish club. Head with epistome feebly gibbous, confusedly, frontward rather superficially punctured, punctation toward frontal suture granulo-rugose, anteriorly and laterally pubescent, hairs backward curved; clypeus widely but moderately sinuate at middle, rounded at sides, bordered, border faintly upturned; genae rounded, elongately ciliate, more protruding than eyes; frontal suture distinctly impressed, not tuberculate; front scarcely but nearly regularly punctured, punctures large and with rather elongate setae abruptly backwardly curved. Pronotum moderately transverse; anterior margin distinctly membranous; feebly flattened and with trace of longitudinal groove on disc; strongly convex at sides; roughly punctured; punctation rather dense; punctures reniform, feebly umbilicate, piligerous, short hairs backward curved; front angles widely rounded; sides thinly bordered, rather shortly and sparsely bristled, sinuate before hind angles; latter widely truncate and inwardly sinuate; base not bordered, straightly rather elongately ciliate at middle, distinctly bisinuate and laterally rather acutely lobate at elytral shoulders level. Scutellum microreticulate, nearly smooth, curved at sides. Elytra regularly oval, moderately convex, distinctly denticulate at shoulder; striae wide, microreticulate at bottom so rather opaque, not punctured; interstices slightly larger than striae, moderately convex, somewhat more raised at middle, rather shiny, with lateral longitudinal row of enough large punctures obliquely shortly setigerous, subcariniform toward apex; the sixth one reduced to a subhumeral but independent rudiment, apical sutural angle rounded. Hind tibiae superior apical spur as long as first tarsal segment; latter shorter than following three combined. Fore tibiae

distinctly widened inward in both sexes. Male: fore tibiae without apical spur, their outer distal tooth strongly broadened and anteriorly straightly truncate; middle tibiae lacking of inferior apical spur and with apical margin inwardly lobate; lobe with very short spines apically rounded; hind tibiae flattened and transversely broadened. Female: fore tibiae with distinct apical spur and distally, normally tridentate at outer margin; middle tibiae with two apical spurs and with apical margin not lobate inwardly; hind tibiae normally shaped.

DISTRIBUTION. Romania (Costanza), Greece (Thessaloniki) and European Turkey (Istanbul).

REMARKS. Species extremely rare, probably inhabiting burrows or nests of rodents (*Spermophilus*).

About the type locality "Costantinopel" (Constantinople) we remark that, at times, with this name, or as "Bysantium", was intended the town on the right side of Bosphorus in European Turkey, opposite to the Asian village of Scutari considered as one of its suburbs (Predari, 1871: 345)

Genus *PARACROSSIDIUS* Balthasar, 1932 **stat. nov.**

Aphodius (*Paracrossidius*) Balthasar, 1932a: 30; Balthasar, 1964: 47 (as synonym of *Platyderides*); M. Dellacasa, 1988a (1987): 176

TYPE SPECIES: *Aphodius instigator* Balthasar, 1932 (original designation).

DESCRIPTION. Medium size species (length 5-10 mm), oval-elongate, feebly convex, rather shiny; glabrous, elytra usually shortly pubescent toward apex. Piceous, sides of pronotum and elytra more or less widely yellowish. Head large; epistome nearly flat, finely punctured; clypeus nearly semicircular, thickly bordered, border glabrous, anteriorly more or less strongly upturned; genae acutely angulose, elongately ciliate, strongly more protruding than eyes; latter rather small; frontal suture quite obsolete. Pronotum widely transverse, finely sparsely punctured, at sides only with few larger punctures mixed; sides rounded, thickly bordered, border shortly bristled; hind angles obliquely truncate; base not bordered. Scutellum small, triangularly elongate, sunk at middle. Elytra feebly widened posteriorly, feebly depressed at middle of preapical declivity; not denticulate at shoulders; finely striate, striae deeply punctured, crenulate; interstices more or less convex, punctured, on apical half shortly sparsely pubescent; epipleura wide. Pygidium with several sparse and very elongate setae. Fore tibiae distally tridentate and proximally feebly denticulate at outer margin with apical spur short and abruptly downward bent; upper side faintly and sparsely punctured. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with elongate and irregularly unequal spinules. Pygidium with fine, rather dense and recumbent pubescence, mixed few, moderately elongate and straight setae; its apical margin with several fine cilia strongly elongate. Sexual dimorphism shown in males by fore tibiae strongly widened at inner margin, their apical spur apically truncate. Aedeagus stout with paramera curved and apically acuminate. Epipharynx feebly bisinuate at anterior margin, widely rounded at sides; epitorma conical; corypha with several strong apical spiculae, the two central ones stronger, more elongate and slightly protruding beyond front margin;

pedia sparsely pubescent with many stout and rather elongate spines mixed; chaetopariae slender, moderately elongate and rather densely arranged.

DISTRIBUTION. South-eastern Palearctic region.

REMARKS. We were not able to find the type specimen of *Aphodius instigator* Balthasar, 1932. From the original description one can infer that the specimen be a female as otherwise stated also by Petrovitz (1958a: 137) who supplied sexual discriminating characters.

The sexual dimorphism reported as above is based on Petrovitz's observations because we studied only some male specimens identified as *Aphodius instigator* by our colleague David Král (Prague).

Paracrossidius instigator (Balthasar, 1932) **n. comb.** (figs 745, 748-750)

Aphodius (*Paracrossidius*) *instigator* Balthasar, 1932a: 33; Petrovitz, 1958a: 137 (male description); M. Dellacasa, 1988a (1987): 246

Aphodius (*Platyderides*) *instigator*; Balthasar, 1964: 51

TYPE LOCALITY: Tatsienlu-Kiulung, Prov. Szetschwan, Mittel China.

TYPE DEPOSITORY: Balthasar collection, Národní Muzeum. Prague (holotype female (?) not examined).

DESCRIPTION. Length 6-7 mm, oval-elongate, feebly convex, rather shiny; glabrous, elytra shortly pubescent toward apex. Piceous, front angles of pronotum as well as juxtasutural interstices, shoulders and lateral margins of elytra, more or less widely brown-yellowish, legs brownish; antennal club piceous. Head large, shiny; epistome faintly gibbous at centre, very finely and sparsely punctured; clypeus nearly semicircular, thickly bordered, border anteriorly distinctly upturned, glabrous; genae acutely angulate, elongately ciliate, strongly more protruding than eyes; frontal suture obsolete; front more distinctly and densely punctured than epistome. Pronotum widely transverse, feebly convex, shiny, very finely and somewhat irregularly punctured, on sides there are few sparse larger punctures mixed; lateral margins rounded, strongly bordered, border interrupted at middle by small but distinct foveola, shortly and sparsely bristled; hind angles obliquely truncate, thinly bordered; base feebly bisinuate, not bordered. Scutellum distinctly impressed at middle, nearly impunctate. Elytra rather shiny, feebly broadened posteriorly, faintly depressed near suture on preapical declivity; finely but distinctly striate; striae deeply punctured, crenulate; interstices moderately convex on disc, flattened preapically, distinctly and coarsely punctured, punctation sparse toward base, very dense and subconfluent toward apex where punctures are shortly setigerous. Hind tibiae superior apical spur longer than first tarsal segment; latter as long as following two combined. Male: fore tibiae widely broadened toward apex at inner margin, their apical spur obliquely truncate apically. Female: fore tibiae rather normally shaped; their apical spur rounded apically.

DISTRIBUTION. China.

Genus *PARADELOPARIUS* Landin, 1959 **stat. nov.**

Aphodius (*Paradeloparius*) Landin, 1959: 2; M. Dellacasa, 1988a (1987): 246

Aphodius (*Aphodius* Artengruppe *Paradeloparius*); Endrödi, 1960b: 179

Aphodius (Artengruppe *Paradeloparius*); Endrödi, 1964a: 222

Aphodius (group *Paradeloparius*); Endrödi & Rakovič, 1981: 49

TYPE SPECIES: *Aphodius circumdatus* Klug, 1855 (original designation).

DESCRIPTION. Rather large or large species (length 10-17 mm), widely oval, moderately convex, shiny, glabrous. More or less dark brownish; lateral margins of head, pronotum and often elytra too, paler. Head with epistome distinctly gibbous, finely punctured; clypeus feebly sinuate at middle, widely rounded at sides, thinly bordered, border shortly pubescent; genae obtusely rounded, ciliate, more protruding than eyes; latter medium sized; frontal suture distinctly impressed, not tuberculate. Pronotum transverse, feebly convex and finely punctured; only lateral margins thickly bordered. Scutellum small, triangular. Elytra broadly oval, striae punctured, crenulate; first one as broad as second apically; ninth not reaching tenth before shoulder; interstices nearly flat, punctulate. Fore tibiae distally tridentate and proximally not serrulate at outer margin; upper side coarsely, rather sparsely but nearly regularly punctured. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with spinules alternately unequal. Pygidium with elongate setae at apical margin. Sexual dimorphism shown in males by a distinct foveola at middle of front margin of pronotum. Aedeagus with paramera shorter than tegmen and feebly curved toward apex. Epipharynx broadly transverse; anterior margin feebly outwardly curved and elongately ciliate; epitorma drop-shaped; corypha with several elongate apical spiculae; pedia pubescent with oblique belt of strong spines mixed; chaetopariae slender, elongate, densely arranged and proximally lengthened.

DISTRIBUTION. Afrotropical region.

Paradeloparius circumdatus (Klug, 1855) **n. comb.** (figs 746, 751-753)

Aphodius circumdatus Klug, 1855: 656

Aphodius (*Adeloparius*) *circumdatus*; A. Schmidt, 1913: 134

Adeloparius circumdatus; Paulian, 1942: 68

Aphodius (*Paradeloparius*) *circumdatus*; Landin, 1959: 2

TYPE LOCALITY: Sena [Mozambique].

TYPE DEPOSITORY: Zoologisches Museum. Humboldt Universität. Berlin (lectotype male, designated by Landin *in litteris*, examined).

DESCRIPTION. Length 10-17 mm, widely oval, moderately convex, shiny, glabrous. Dark brownish; head, sides of pronotum, juxtasutural interstice, apex and lateral margins of elytra shadowy reddish. Head with epistome strongly gibbous, doubly punctured, finer rather dense and regular punctures throughout scattered but sparser at centre; feebly larger ones placed on sides only; clypeus sinuate at middle, widely rounded at sides; genae obtusely rounded, rather shortly and sparsely ciliate, more protruding than eyes; frontal suture faintly impressed, not tuberculate. Pronotum widely transverse, feebly convex, faintly punctured; lateral margins strongly bordered; hind angles rounded; propleura elongately ciliate, cilia from above laterally frontward visible; base faintly bisinuate, not bordered. Scutellum basally nearly as wide as first two elytral interstices, finely and sparsely punctured on basal half. Elytra broadly oval; striae with very small

and contiguous punctures but distinctly crenulate; interstices nearly flat, finely and sparsely punctured. Hind tibiae superior apical spur somewhat shorter than first tarsal segment; latter as long as following three combined. Male: anterior margin of pronotum with a median oval foveola, frontwardly ending with a feeble transverse gibbosity and postero-laterally more or less strongly gibbous marginally. Female: pronotum without anterior median foveola.

DISTRIBUTION. Oriental and Central Africa (Kenya, Rwanda, Mozambique and Zambia).

Genus *PARADIDACTYLIA* Balthasar, 1937

Paradidactylia Balthasar, 1937: 199; Paulian, 1942: 123 (Eupariina); Clément, 1958b: 1222 (Aphodiini)

Aphodius (*Aphodius* Artengruppe *Paradidactylia*); Endrödi, 1960b: 168

Aphodius (Artengruppe *Paradidactylia*); Endrödi, 1964a: 193

Aphodius (group *Paradidactylia*); Endrödi & Rakovič, 1981: 48

Aphodius (*Paradidactylia*); M. Dellacasa, 1988a (1987): 246

TYPE SPECIES: *Paradidactylia atra* Balthasar, 1937 (*Aphodius* (*Paradidactylia*) *venaloides* Endrödi, 1960, *nomen novum conservandum*).

DESCRIPTION: Small size species (length 2.5-4 mm), convex, oval, either smooth or distinctly microreticulate so either shiny or dull; usually glabrous, rarely elytra shortly pubescent. Brown-reddish or brown-blackish, sometimes elytra paler with dark scutellar spot. Head distinctly narrowed frontward; epistome gibbous, usually with medium size and rather dense punctation; clypeus feebly sinuate at middle, rounded at sides, very thinly bordered; border shortly and rather sparsely bristled; genae small, obtusely rounded, shortly and sparsely ciliate, not more protruding than eyes; latter rather large; frontal suture finely impressed, not tuberculate. Pronotum transverse, doubly punctured; parallel-sided toward base; lateral margins thinly bordered, distinctly sinuate before hind angles; latter more or less strongly acuminate; base not bordered, sometimes crenulate by a belt of contiguous large punctures. Scutellum small, pentagonal, narrowly elongate, parallel-sided toward base and somewhat narrower than first two elytral interstices. Elytra oval, distinctly and acutely denticulate at shoulder; striae punctured, crenulate, first one as wide as other apically. Fore tibiae distally tridentate and proximally feebly serrulate at outer margin; upper side more or less coarsely and sparsely punctured. Middle and hind tibiae with feeble transverse carinae on outer face; apically fimbriate with progressively unequal spinules. Hind tibiae superior apical spur shorter than first tarsal segment. Pygidium glabrous or finely pubescent, often with two straightly elongate apical setae. Sexual dimorphism shown in males by fore tibiae more or less distinctly widened toward apex, their apical spur inwardly curved apically. Aedeagus with paramera short, regularly curved and apically acuminate. Epipharynx transverse; anterior margin sinuate at middle and elongately ciliate; pariae with pubescent areola contiguous to epipharyngeal lateral margins; pedia finely pubescent with longer and stouter spines mixed; chaetopariae elongate and rather dense.

DISTRIBUTION. Palearctic, Afrotropical and Oriental region.

REMARKS. M. Dellacasa (1988a) listed twenty species ascribed to this genus-group taxon.

Previously Petrovitz (1961d) transferred into *Paradidactylia* from *Trichonotulus*, *Phalacronothus* and *Gonaphodiellus* several species on the basis of their morphological characters established by Endrödi (1960a). Adversely, Balthasar (1964: 319) did not accept Petrovitz's systematics and stated that only Afrotropical taxa pertain to *Paradidactylia*.

Stebnicka (1989) figured the epipharynx of two Oriental species: *Aphodius wichei* Petrovitz, 1961 and *Aphodius biseriatus* A. Schmidt, 1908 already ascribed by Petrovitz to *Paradidactylia*. The epipharynx, with epitorma wide and corypha with two large median apical spiculae basally distant, is similar to those of other *Paradidactylia* taxa and therefore the proposal of Petrovitz is validated.

It is also probable that further species nowadays recorded in other genus-group taxa of Aphodiinae would be ascribed to *Paradidactylia* on the basis of the study of their epipharynx.

Paradidactylia venaloides (Endrödi, 1960) **n. comb.** (figs 747, 754-756)

Paradidactylia atra Balthasar, 1937: 201; Paulian, 1942: 123

Aphodius (*Aphodius* Artengruppe *Paradidactylia*) *venaloides* Endrödi, 1960b: 71 [*nomen novum conservandum* for *Aphodius* (*Paradidactylia*) *ater* (Balthasar, 1937) nec *Aphodius* (*Agrilinus*) *ater* (DeGeer, 1774)].

TYPE LOCALITY: "Ukerewe-Insel im Victoria-See" [Tanzania].

TYPE DEPOSITORY: Deutschen Entomologischen Institutes. Berlin Dahlem (type not examined).

DESCRIPTION. Length 2.5-3.5 mm, oval-elongate, convex, microreticulate so rather dull, glabrous. Quite brown-blackish, sometimes elytra and legs dark brown-reddish. Head with epistome gibbous, regularly, medium size densely punctured; clypeus feebly sinuate at middle, obtusely rounded at sides; genae small, feebly auriculate, faintly more protruding than eyes. Pronotum transverse; doubly punctured; punctures smaller than those on head, sparse and nearly regularly scattered throughout; large punctures, six to eight times larger than small punctures, irregular, denser at sides of disc but sparser at centre; shiny even quite microreticulate at bottom; sides subsinuate before hind angles; latter subacute; lateral margins thinly bordered; base not bordered but crenulate by a transverse belt of contiguous large punctures. Scutellum smooth. Elytra oval; distinctly denticulate at shoulder; finely striate; striae distinctly crenulate; interstices flat, finely and sparsely punctured. Pygidium with some short pale apical setae and with other two straight and much more elongate at each side of discal area. Hind tibiae superior apical spur a fourth shorter than first tarsal segment; latter shorter than following two combined. Male: inner margin of fore tibiae feebly widened toward apex, their apical spur slightly inwardly and downwardly curved apically. Female: fore tibiae normally shaped, their apical spur straight.

DISTRIBUTION. Kenya, Tanzania, Uganda, Zaire.

REMARKS. One of us (Bordat) examined one paratype of *Paradidactylia atra* preserved in Paris Museum.

Genus *PARAMMOECIUS* Seidlitz, 1891 **stat. nov.**

Aphodius (*Parammoecius*) Seidlitz, 1891: 143; Reitter, 1892: 195 (as synonym of *Agrilinus*); Balthasar, 1964: 360; G. Dellacasa, 1983: 366

TYPE SPECIES: *Aphodius gibbus* Germar, 1817 (subsequent designation: Balthasar, 1964)

DESCRIPTION. Rather small species (length 4-5 mm), subelongate, strongly convex, shiny or dull, usually glabrous. Quite blackish, rarely quite reddish; sometimes blackish with reddish elytra. Head with epistome strongly gibbous, abruptly bent downward, irregularly and subrugosely punctured; clypeus sinuate at middle angulate or subdenticulate at sides, thinly bordered, border glabrous; genae rounded, sparsely and rather elongately ciliate, more protruding than eyes; latter rather small; frontal suture tuberculate or not. Pronotum densely and irregularly punctured; thinly bordered at base, border sometimes widely interrupted at middle. Scutellum small, triangular. Elytra more or less strongly convex, strongly denticulate at shoulder; striae punctured, crenulate; interstices usually flat, apically convex. Fore tibiae distally tridentate and proximally feebly serrulate at outer margin; upper side nearly smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with spinules stout and irregularly unequal. Pygidium with short, sparse and recumbent pubescence on basal half and with more elongate setae toward apical margin; latter sparsely ciliate. Sexual dimorphism shown in males mainly by stronger tubercles of frontal suture and by pronotum not frontwardly narrowed. Aedeagus short and stout; paramera abruptly bent nearly at right angle. Epipharynx distinctly sinuate at front margin, widely rounded at sides; epitorma broadly drop-shaped; corypha with very short apical spiculae; pedia not or nearly quite pubescent and with few stout spines mixed; chaetopariae dense and elongate.

DISTRIBUTION. Palearctic region.

Parammoecius gibbus (Germar, 1817) **n. comb.** (figs 757, 761-763)

Aphodius gibbus Germar in Åhrens, 1817: n. 2

Ammoecius gibbus; Erichson, 1848: 908

Aphodius (*Parammoecius*) *gibbus*; Seidlitz, 1891: 143; A. Schmidt, 1913: 160

Aphodius (*Agrilinus*) *gibbus*; Reitter, 1892: 197

TYPE LOCALITY: Austria.

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 4-4.5 mm, feebly elongate, convex, glabrous; head and pronotum moderately shiny elytra dull. Blackish; clypeal and pronotum lateral margins shadowy reddish; antennae brownish with blackish club; legs dark brown-reddish, tarsi paler. Head with epistome transversely subcarinate, abruptly bent downward, densely and rugosely punctured on disc, punctation rather sparse and fine distally; clypeus widely but feebly sinuate at middle, subdenticulate at sides; genae rounded, distinctly more protruding than eyes; frontal suture nearly faint, weakly tuberculate. Pronotum convex, transverse, finely and densely punctured, microreticulate; sides sinuate before hind angles; latter obtuse; base quite very thinly bordered. Scutellum elongate, microreticulate, sparsely punctured. Elytra strongly convex, widened posteriorly;

shoulder distinctly denticulate; striae wide, deep, superficially punctured, feebly crenulate; interstices flat or nearly flat on disc, distinctly convex apically, strongly microreticulate so dull, shallowly and sparsely punctured. Hind tibiae superior apical spur as long as first tarsal segment; latter as long as following three combined. Male: frontal suture with three transverse tubercles; pronotum relatively more sparsely punctured on disc. Female: tubercles of frontal suture faint; pronotum relatively more densely punctured on disc.

DISTRIBUTION. Central and Southern European mountains.

Genus *PARANIMBUS* A. Schmidt, 1913 **stat. nov.**

Aphodius (*Paranimbus*) A. Schmidt, 1913: 145; G. Dellacasa, 1990a: 418

TYPE SPECIES: *Aphodius peruanus* Erichson, 1834 (monotypy).

DESCRIPTION. Medium or rather large species (length 7-12 mm), elongate, parallel-sided, moderately convex, more or less shiny, with rather sparse and short pubescence. Blackish, sometimes quite testaceous or elytra yellowish with large, brownish discal spot. Head with epistome feebly gibbous, punctured; clypeus rather semicircular, anteriorly truncate, rounded at sides, thickly bordered, border with short and sparse blackish bristles; genae depressed, elongately and densely ciliate, more protruding than eyes, posteriorly rather squarely truncate; eyes rather large; frontal suture distinctly impressed, not tuberculate. Pronotum irregularly and sparsely punctured, lateral punctures with hairs posteriorly recumbent; sides distinctly bordered, largely rounded, elongately ciliate; base pubescent, bordered or not; hind angles largely rounded. Scutellum small, triangularly elongate, feebly concave. Elytra elongate, striae punctured or not; all interstices moderately convex, either, alternately, convex and shiny or flattened and dull, with short, scarce pubescence and with a central row of more or less scattered punctures; epipleura strong, distinctly, completely ciliate. Legs slender; middle and hind tarsi longer than tibiae; first tarsal segment as long as following two combined. Fore tibiae distally tridentate and proximally feebly serrulate at outer margin; upper side sparsely punctured, punctures elongately setigerous. Middle and hind tibiae with feeble transverse carina on outer face; apically fimbriate with very elongate and irregularly unequal spinules. Pygidium superficially microreticulate, finely and sparsely punctured, each puncture with a short recumbent seta; its apical margin with cilia sparse but extremely elongate. Sexual dimorphism shown in males throughout by fore tibiae relatively more slender and elongate, sinuate at inner margin, widened and downwardly curved apically and with third distal tooth relatively much smaller. Aedeagus not strongly sclerotized, rather stout; paramera with characteristic sinuosity at inferior margin. Epipharynx with double anterior margin, inner margin regularly curved, external margin rather straight; sides largely rounded; epitorma slender, cylindrical, apically widened; corypha with strong apical spiculae feebly protruding beyond anterior distal margin; pedia strongly and irregularly pubescent; chaetopariae dense, short and thin; proplegmatium unusually advanced, bisinuate.

DISTRIBUTION. Neotropical region montane areas (Andes).

Paranimbus peruanus (Erichson, 1834) **n. comb.** (figs 758, 764-766)

Aphodius peruanus Erichson, 1834: 237

Aphodius (Paranimbus) peruanus; A. Schmidt, 1913: 145; G. Dellacasa, 1990a: 420

TYPE LOCALITY: Peru.

TYPE DEPOSITORY: Zoologisches Museum Humboldt Universität. Berlin (lectotype male examined).

DESCRIPTION. Length 7-8 mm, elongate, flattened, rather shiny with elytra nearly dull, pubescent. Head and pronotum blackish, with more or less wide reddish lateral margins; elytra yellow-brownish with discal cloudy blackish spot, rarely quite yellowish or blackish; antennal club piceous; legs brownish, tarsi paler; ventrally testaceous. Head rather large; epistome moderately convex, somewhat shiny, finely microreticulate, distinctly and rather regularly punctured, punctures with short brownish hairs backwardly recumbent; clypeus subtruncate, rounded at sides; genae much more protruding than eyes, feebly depressed, posteriorly truncate, densely and elongately ciliate; genal sutures distinct; frontal suture strongly deep, V-shaped, feebly gibbous at sides; front sparsely and superficially punctured. Pronotum transverse; at base as wide as elytra, moderately convex, somewhat shiny, with punctation rather superficial and irregularly scattered, lateral punctures with short brownish hairs backward curved, sides and base completely and distinctly bordered, border elongately ciliate, cilia shorter on basal margin; sides and hind angles widely rounded; base feebly bisinuate. Scutellum elongate, distinctly microreticulate, rather dull, feebly curved at sides, rather concave, irregularly and sparsely punctured near base, punctures shortly setigerous. Elytra oval-elongate, with feeble preapical gibbosity, rather dull; striae narrow, faintly punctured, shallow apically; interstices with central row of scattered punctures, punctures shortly setigerous, distinctly microreticulate. Hind tibiae superior apical spur shorter than first tarsal segment; latter as long as following two combined. Under side shiny, with elongate testaceous pubescence; middle and hind femora with irregular belt of strong setigerous punctures on ventral face. Male: head relatively larger, more widened, more flat, more shiny, less densely punctured; genae distinctly angulate and much more protruding than eyes; pronotum more transverse, less convex, more superficially and sparsely punctured; elytra more distinctly elongate, striae narrower and more shallow, odd interstices feebly convex, somewhat more shiny than even ones; latter flat, more strongly microreticulate, with some central punctures shortly setigerous; preapical gibbosity more distinct; fore tibiae elongate, sinuate at inner margin, widened and apically downwardly curved, proximal outer tooth relatively smaller, apical spur stout; metasternal plate nearly flat, superficially microreticulate, with few, very irregularly scattered setigerous punctures, with a narrow longitudinal groove. Female: head relatively smaller, narrower, more convex, less shiny, more densely and strongly punctured; genae less angulate, less distinctly more protruding than eyes; pronotum less transverse, more convex, more densely punctured, elytra less elongate, all interstices more or less shiny, feebly convex, with central row of scattered setigerous punctures; preapical gibbosity faint; metasternal plate with longitudinal groove relatively deeper and backward widened; fore tibiae not sinuate at inner margin, with three strong distal teeth at outer margin; apical spur more elongate and acuminate apically.

DISTRIBUTION. High mountains of Central Peru and Bolivia.

Genus *PAULIANELLUS* Balthasar, 1938 **stat. nov.**

Aphodius (Paulianellus) Balthasar, 1938b: 6; Stebnicka, 1986: 28

TYPE SPECIES: *Aphodius (Paulianellus) maderi* Balthasar, 1938 (monotypy).

DESCRIPTION. Medium size species (length 5-6.5 mm), oval-elongate, convex, shiny, glabrous. Piceous or brown-reddish. Head with epistome gibbous, punctured; clypeus sinuate at middle, rounded at sides, quite finely bordered, border glabrous; genae obtusely angulate, shortly and sparsely ciliate, distinctly more protruding than eyes; latter rather large; frontal suture finely impressed, not at all tuberculate. Pronotum transverse, punctured; sides thickly bordered and subparallel toward base; hind angles truncate and, as well as base, not bordered. Scutellum small, pentagonal with sides shortly parallel near base. Elytra oval, not denticulate at shoulder, striae punctured, not joined each other apically but sometimes preapically shortened; first one not widened at apex. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side with very sparse and extremely fine punctures. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with elongate and alternately unequal spinules. Hind tibiae superior apical spur longer than first tarsal segment. Hind tarsi as long as tibiae. Pygidium with sparse, rather elongate and straight pubescence. Sexual dimorphism shown in males by metasternal plate relatively deeply grooved and more sparsely punctured. Aedeagus with paramera curved apically. Epipharynx distinctly sinuate at middle of anterior margin; epitorma drop-shaped, not reaching the fore margin; corypha with several slender apical spiculae among which two ones distinctly stouter and more elongate; chaetopariae rather stout; pedia densely pubescent, with some stouter spines mixed near anterior margin.

DISTRIBUTION. Eastern Palearctic and Oriental region.

REMARKS. M. Dellacasa (1988a) listed seven species ascribed to *Paulianellus* but their morphological characteristics are not at all homogeneous.

In her dichotomical key, Stebnicka (1986: 24) divided this genus in three groups but only the species pertaining to the first are true *Paulianellus*. The other ones, with maxillary palps broadened in males and elytra denticulate at shoulder, have to be excluded from *Paulianellus* as herein taxonomically defined.

Paulianellus maderi (Balthasar, 1938) **n. comb.** (figs 759, 767-769)

Aphodius (Paulianellus) maderi Balthasar, 1938b: 7

TYPE LOCALITY: Prov. Szetschwan, China.

TYPE DEPOSITORY: Balthasar collection, Národní Muzeum. Prague (holotype female examined).

DESCRIPTION. Length 5-6.5 mm, elongate, convex, strongly shiny, glabrous. Piceous; clypeus and lateral margins of pronotum shadowy reddish; sometimes quite dark brown-reddish. Head with epistome gibbous, doubly punctured; fine smaller punctures regular, rather dense and scattered throughout; large punctures, twice or three times larger than small punctures, sparse and placed distally around; clypeus faintly sinuate at middle,

widely rounded at sides; genae obtusely angulate, rather elongately sparsely ciliate, more protruding than eyes; frontal suture thinly impressed, marked by a blackish line. Pronotum transverse, nearly subparallel-sided, somewhat larger toward base only; doubly punctured; smaller punctures like those on head; large punctures, four to six times larger than small punctures, irregularly sparse around disc; only lateral margin thickly bordered; hind angles truncate, feebly inward sinuate, not bordered; base faintly bisinuate, not bordered. Scutellum with few very small punctures on basal half. Elytra not denticulate at shoulder; finely striate; striae distinctly crenulate; interstices flat on disc but lateral ones distinctly convex mainly toward apex, very finely sparsely punctured. Fore tibiae apical spur somewhat shorter than first two tarsal segment, regularly acuminate and outward curved. Hind tibiae superior apical spur longer than first tarsal segment; latter as long as following three combined. Male: metasternal plate relatively more deeply concave and more sparsely punctured. Female: metasternal plate nearly flat but more densely punctured.

DISTRIBUTION. Nepal, China, Korea, Thailand.

Genus *PHAEAPHODIUS* Reitter, 1892

Aphodius (*Phaeaphodius*) Reitter, 1892: 205; Balthasar, 1964: 281; G. Dellacasa, 1992b: 588

Aphodius (*Limaroides*) Balthasar, 1932b: 109; Stebnicka & Galante, 1991: 726 (as synonym of *Phaeaphodius*)

Phaeaphodius; Paulian, 1942: 85

Aphodius (Artengruppe *Phaeaphodius*); Endrödi, 1964a: 268

Aphodius (group *Phaeaphodius*); Endrödi & Rakovic, 1981: 54

TYPE SPECIES: *Aphodius solskyi* Harold, 1871 [junior synonym of *Aphodius rectus* (Motschulsky, 1866)] (original designation).

DESCRIPTION. Small or medium size species (length 4-6 mm), moderately convex, shiny, glabrous or rather glabrous. Quite black or brownish; sometimes elytra yellow with blackish spots, rarely quite testaceous; antennae and legs blackish, latter with paler tarsi. Head with epistome gibbous, transversely subcarinate, coarsely subrugosely punctured; clypeus sinuate at middle, generally rounded at sides, thickly bordered, border glabrous; genae obtusely rounded, rather densely and elongately ciliate, more protruding than eyes; latter small; frontal suture usually tuberculate. Pronotum transverse, moderately convex, punctured; sides feebly rounded; hind angles distinctly, sometimes inward sinuately truncate; base more or less completely bordered. Scutellum small, pentagonal subparallel-sided toward base. Elytra elongate, faintly widened posteriorly; striae distinctly punctured; interstices flat or moderately convex. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side very finely and sparsely punctured. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with elongate and irregularly unequal spinules. Pygidium with dense, elongate and recumbent pubescence; its apical margin finely, densely and rather elongately ciliate. Sexual dimorphism shown in males by more strong tubercles of frontal suture; by pronotum not narrowed frontward; by fore tibiae apical spur and middle tibiae inferior apical spur hooked apically. Aedeagus slender, with very elongate paramera. Epipharynx

feebly sinuate at anterior margin and widely rounded at sides; epitorma broadly conical; corypha with protruding slender apical spiculae; chaetopodia throughout densely pubescent and with several subregular belts of spines, much more short, stout and densely arranged near epitorma base; chaetopariae dense and moderately elongate.

DISTRIBUTION. Holarctic region.

Phaeaphodius rectus (Motschulsky, 1866) (figs 760, 770-772)

Calamosternus rectus Motschulsky, 1866: 169

Aphodius solskyi Harold, 1871a: 251

Aphodius (*Phaeaphodius*) *solskyi*; Reitter, 1892: 205

Aphodius (*Phaeaphodius*) *rectus*; A. Schmidt, 1907b: 67; G. Dellacasa, 1992b: 589

Phaeaphodius rectus; Paulian, 1942: 85

TYPE LOCALITY: "Japon" (conventional).

TYPE DEPOSITORY: Zoologicheskij Muzej, M. G. U. Moscow (type not examined).

DESCRIPTION. Length 5-6 mm, oblong, convex, shiny, glabrous. Black, sometimes elytra brown-yellowish with suture and lateral wide spot blackish, rarely quite yellowish or reddish. Head with epistome feebly convex, transversely subcarinate, coarsely punctured on disc, subrugosely punctured distally; clypeus feebly sinuate at middle, rounded at sides; genae obtusely rounded, more protruding than eyes; frontal suture tuberculate. Pronotum strongly convex, transverse, shiny, doubly punctured, smaller superficial punctures regularly but rather sparsely scattered, mixed few larger ones much sparser or, at least, lacking on disc and more dense laterally; sides thinly bordered, border sparsely elongately ciliate; hind angles obtusely truncate; basal border thin, laterally interrupted before hind angles. Scutellum shiny, flat, with few rather large and sparse punctures. Elytra strongly convex, feebly widened backward; striae almost superficial, distinctly punctured, crenulate; interstices flat, with a longitudinal row of microscopical punctures near lateral margins only, apically somewhat more distinctly punctured. Hind tibiae superior apical spur as long as first tarsal segment; latter longer than following two combined. Male: median tubercle of frontal suture distinct; pronotum not narrowed frontward, without large punctures on disc; fore tibiae apical spur downward bent, feebly hooked apically; inferior apical spur of middle tibiae distinctly hooked apically. Female: median tubercle of frontal suture very weak; pronotum feebly narrowed frontward, with large punctures on disc also; fore tibiae apical spur straight and apically acuminate; inferior apical spur of middle tibiae outward curved and acuminate apically.

DISTRIBUTION. Holarctic region.

Genus *PHALACRONOTHUS* Motschulsky, 1859

Phalacronothus Motschulsky, 1859a: 156; Paulian, 1942: 81; Ádám, 1994: 14

Aphodius (*Emadus*) Mulsant & Rey, 1870b (1869): 449

Aphodius (*Phalacronothus*); Reitter, 1892: 210 (as synonym of *Orodalus*); G. Dellacasa, 1983: 373

Aphodius (groupe *Phalacronothus*); Bedel, 1911a: 69

Aphodius (*Caenaphodius*) Balthasar, 1936: 5 (**n. syn.**); Balthasar, 1964: 332 (as synonym of *Esymus*)

Aphodius (*Paragolius*) Balthasar, 1945b: 42; Stebnicka, 1982: 79 (as synonym of *Phalacronothus*)

TYPE SPECIES: *Scarabaeus quadrimaculatus* Linné, 1761 (monotypy).

DESCRIPTION. Small size species (length 2.5-4 mm), oval-elongate, convex, shiny, glabrous or nearly glabrous. Blackish; elytra either with more or less widened reddish spots, rarely quite blackish or reddish, or yellowish with juxtasutural interstice and apex of elytra blackish. Head with epistome punctured; clypeus sinuate at middle, rounded at sides, thinly bordered, border very shortly and sparsely bristled; genae obtusely rounded, ciliate, more protruding than eyes; latter medium sized; frontal suture nearly faint, not tuberculate. Pronotum transverse, punctured; hind angles obtusely rounded; base thinly bordered. Scutellum small, pentagonal, sparsely punctured. Elytra convex, elongate; striae usually fine, more or less distinctly crenulate; first stria apically wider and more deeply impressed than near scutellum; interstices usually flat and sparsely punctured, seldom more or less convex and coarsely punctured. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side nearly smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with elongate and irregularly unequal spinules. Pygidium shiny, with few straight setae moderately elongate; its apical margin finely, sparsely and rather elongately ciliate. Sexual dimorphism shown in males mainly by fore tibiae apical spur, clavate, hooked or truncate apically. Aedeagus rather stout; paramera short, widened and membranous apically. Epipharynx feebly sinuate at front margin, more or less widely rounded at sides; epitorma drop-shaped; corypha provided by stout spinules, central ones very elongate; pedia with wide and dense prophobae and with few chaetae irregularly scattered; chaetopariae short, strong, moderately dense.

DISTRIBUTION. Palearctic region.

REMARKS. Reitter (1892: 208) described *Aphodius fumigatulus* and *Aphodius sculpturatus* from the same locality (Araxesthal: Ordubad), ascribing both to subgenus *Esymus*, distinguishing the two species mainly by the strongly different punctuation of first elytral stria.

Some years ago, two of us (G. & M. Dellacasa) had the chance to collect, on the same date (April 4th, 1992) and in the same pasture (Turkey, Vil. Konya, Çogurler) a remarkable series of specimens pertaining to said taxa. The study of this material surprisingly showed that all specimens identifiable as *Aphodius fumigatulus* were males and those identifiable as *Aphodius sculpturatus* were females.

Though in Reitter's collection at Budapest Museum is preserved the male holotype specimen of *fumigatulus* only, we are, nearly doubtless, convinced that said taxa are conspecific and we propose the **new synonymy** of *Aphodius sculpturatus* Reitter, 1892 versus *Aphodius fumigatulus* Reitter, 1892.

Balthasar (1964: 340) synonymized his *Aphodius asperolineatus* described in 1936 from "Anti-Libanon, Syrien" (type species, by monotypy, of the new subgenus *Caenaphodius*) with *Aphodius sculpturatus* Reitter, 1892. Obviously, *Caenaphodius* Balthasar, 1936 became junior synonym of *Esymus* Mulsant & Rey, 1870 to which originally pertained Reitter's species.

Adversely, the complex of taxonomical characters (mainly aedeagus, epipharynx and male fore tibiae apical spur) allows to consider *Aphodius fumigatulus* pertaining to the genus *Phalacronothus* as herein systematically intended, thus we propose *Caenaphodius* as its junior synonym.

Stebnicka (1982: 78) ascribed *Aphodius* (*Paragolius*) *botulus* Balthasar, 1945 to the subgenus *Phalacronothus* and synonymized with it *Aphodius naraensis* Nakane, 1956. We had the opportunity to examine the holotype of *Aphodius botulus* and we quite agree with Stebnicka's nomenclatural action.

Phalacronothus quadrimaculatus (Linné, 1761) (figs 773-775, 779)

Scarabaeus quadrimaculatus Linné, 1761: 138

Aphodius quadrimaculatus; Erichson, 1848: 865

Phalacronothus quadrimaculatus; Motschulsky, 1859a: 156

Aphodius (*Orodalus*) *quadrimaculatus*; A. Schmidt in Wytsman, 1910b: 50; Balthasar, 1964: 196

Aphodius (*Phalacronothus*) *quadrimaculatus*; Bedel, 1911a: 70; G. Dellacasa, 1983: 379

Aphodius (*Emadus*) *quadrimaculatus*; A. Schmidt, 1913: 141; Baraud, 1977: 107

TYPE LOCALITY: "Suecia" [Sweden] (conventional).

TYPE DEPOSITORY: probably Linnean Society collection. London (type not examined).

DESCRIPTION. Length 3-4 mm, oval-elongate, moderately convex, shiny or sericeous, glabrous. Blackish; elytra with defined red spots, sometimes either more or less widely brown-reddish or quite reddish or blackish. Head with epistome feebly gibbous, moderately, densely and rather coarsely punctured on disc, punctation regular and coarser distally; clypeus sinuate at middle, rounded at sides, genae obtusely rounded, more protruding than eyes. Pronotum moderately convex, transverse; doubly and rather densely punctured, larger punctures sparse; sides thinly bordered, nearly parallel, feebly sinuate before hind angles; latter obtusely rounded; base thinly bordered. Scutellum rather short, sparsely punctured basally. Elytra elongate-oval, shiny, moderately convex; striae fine, superficially punctured, feebly crenulate; interstices flat, faintly microreticulate, sparsely punctured on elytral disc, punctation coarser laterally. First segment of hind tarsi, as long as superior apical spur of tibiae as well as following two combined. Male: fore tibiae apical spur clavate. Female: fore tibiae apical spur regularly acuminate.

DISTRIBUTION. Europe, Asia Minor, Central and Northern Asia, Morocco, Western Mediterranean Africa.

Genus *PHARAPHODIUS* Reitter, 1892

Aphodius (*Pharaphodius*) Reitter, 1892: 172; Balthasar, 1964: 63; G. Dellacasa, 1998 (1996): 139

Pharaphodius; Paulian, 1942: 31

Aphodius (*Aphodius* Artengruppe *Pharaphodius*); Endrödi, 1960b: 123

Aphodius (Artengruppe *Pharaphodius*); Endrödi, 1964a: 106

Aphodius (group *Pharaphodius*); Endrödi & Rakovič, 1981: 43

TYPE SPECIES: *Scarabaeus marginellus* Fabricius, 1781 (subsequent designation: Paulian, 1942).

DESCRIPTION. Medium size species (length 5-7.5 mm); oblong-elongate; moderately convex; glabrous, more or less distinctly microreticulate so either rather dull or moderately shiny only. More or less dark testaceous with clypeal margin, sides and base of pronotum usually yellowish. Head with epistome gibbous; clypeus quite rounded or anteriorly truncate and faintly sinuate at middle, rounded at sides, thinly bordered, border glabrous; genae obtusely rounded, shortly ciliate, more protruding than eyes; latter medium sized; frontal suture near obsolete, not at all tuberculate. Pronotum transverse, doubly punctured; sides rounded and bordered; hind angles obtusely rounded; base without border. Scutellum small, narrowly triangular, shortly parallel-sided at base. Elytra regularly oval; striae deep, not or feebly crenulate, deeper and free apically; interstices usually flat near base, moderately convex on disc, strongly convex at apex, sparsely and very finely punctured. Fore tibiae distally tridentate and proximally denticulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with spinules stout and irregularly unequal. Pygidium with sparse, moderately elongate and recumbent pubescence; its apical margin densely and shortly ciliate. Sexual dimorphism shown in males by less dense punctation of pronotal disc; by fore tibiae apical spur stouter and obliquely truncate apically; by metasternal plate concave and distinctly punctured. Aedeagus with paramera more or less distinctly membranous apically and with a complex of upper central membranes; tegmen slender and elongate. Epipharynx widely transverse, with distinct pubescent lobes at anterior margin; corypha with elongate spiculae; epitorma upturned chalice-shaped; pedia pubescent and with several stout and elongate spines rather irregularly mixed; chaetopariae dense, rather slender and elongate.

DISTRIBUTION. Afrotropical (?), Mexican Transition Zone, Oriental and Palearctic region.

REMARKS. At present it is impossible to define the systematic limits of genus *Pharaphodius* Reitter, 1892.

As a matter of fact at this genus-group taxon are ascribed more than one hundred species with heterogeneous characteristics, e. g.: length from 3 to 13 mm; clypeus denticulate or rounded at sides; frontal suture tuberculate or not; scutellum triangular or parallel-sided; hind tibiae fimbriate with apical spinules of equal or unequal length; etc.

Notwithstanding this extreme heterogeneousness, ascribing a species to *Pharaphodius* sensu lato, results easy enough. As a matter of fact, beside the small scutellum (as long as 1/8 of elytral suture), most of species ascribed have, at least, the first six striae of elytra ending free at apex.

The systematic redefinition of this genus-group taxon as herein dealt with has the aim to point out mainly the characteristics of its type species to which one can refer when dealing with a true *Pharaphodius*. Other taxa might pertain to already known or new genera.

Pharaphodius marginellus (Fabricius, 1781) (figs 776-778, 780)

Scarabaeus marginellus Fabricius, 1781: 21

Aphodius marginellus; Harold, 1862: 146

Aphodius (*Pharaphodius*) *marginellus*; A. Schmidt, 1913: 125; Landin, 1956a: 218 (lectotype designation and redescription) ; Petrovitz, 1961a: 99; G. Dellacasa, 1998 (1996): 142
Pharaphodius marginellus; Paulian, 1942: 31

TYPE LOCALITY: Coromandel [South-eastern India].

TYPE DEPOSITORY: Banks collection, Natural History Museum. London. (lectotype not examined).

DESCRIPTION. Length 6-6.5 mm; oval-elongate, moderately convex, subshiny, glabrous. Testaceous; epistome, pronotum disc and elytral striae brownish. Head with epistome gibbous, punctulate; clypeus anteriorly truncate, faintly sinuate at middle, widely rounded at sides but subsinuate before genae; genae obtusely rounded, more protruding than eyes; frontal suture nearly obsolete, not at all tuberculate; front with few punctures anteriorly, near frontal line. Pronotum transverse, superficially microreticulate so rather shiny, irregularly and doubly punctured, punctation sparser on disc; sides rounded and distinctly bordered; hind angles obtusely rounded; base not bordered. Scutellum basally parallel-sided and here with few sparse punctures. Elytra oblong, moderately convex; striae deep, distinctly punctured, apically wider and deeper, not crenulate; interstice nearly flat basally, moderately convex on disc, strongly convex apically, superficially microreticulate, very finely and sparsely punctured. Hind tibiae superior apical spur slightly shorter than first tarsal segment; latter somewhat longer than following three combined. Male: pronotum regularly transverse, relatively more sparsely and superficially punctured on disc; fore tibiae apical spur stout and obliquely truncate apically; metasternal plate concave and punctured. Female: pronotum narrowed toward front margin and relatively more densely and coarsely punctured on disc; fore tibiae apical spur slender and regularly acuminate apically; metasternal plate nearly flat and smooth.

DISTRIBUTION. Pakistan, India, Nepal

Genus *PLAGIOGONUS* Mulsant, 1842

Plagiogonus Mulsant, 1842: 306; Ádám, 1994:14

Oloperus Mulsant & Rey, 1870b (1869): 610

Aphodius (*Plagiogonus*); Reitter, 1892: 204; G. Dellacasa, 1983: 380

Aphodius (*Eccoptaphodius*) Iablokov K., 1964: 63; M. Dellacasa, 1988a (1987): 207 (as synonym of *Plagiogonus*)

Aphodius (group *Plagiogonus*); Endrödi & Rakovič, 1981: 48

TYPE SPECIES: *Scarabaeus arenarius* Olivier, 1789 (junior synonym of *putridus* Geoffroy in Fourcroy, 1785) (monotypy).

DESCRIPTION. Small size species (length 2.5-4 mm), oval-elongate, usually strongly convex, shiny, nearly glabrous. Piceous-blackish; sometimes elytra yellowish with suture and apex blackish, rarely elytra yellowish with discal elongate brownish spot. Head with epistome gibbous, finely or coarsely punctured, sometimes frontward more or less distinctly pubescent; clypeus sinuate at middle, rounded, either angulate or subdentate at sides, distinctly bordered, border sparsely ciliate laterally; genae small,

rounded or angulose, ciliate, either feebly or distinctly more protruding than eyes; latter medium sized; frontal suture distinctly impressed, not tuberculate. Pronotum convex, transverse; finely, coarsely and rather densely punctured; sides moderately rounded; hind angles obtuse; base feebly bisinuate, thinly bordered or without border. Scutellum small, narrowly triangular. Elytra oval, more or less feebly widened posteriorly; shoulder either denticulate or not; striae distinctly punctured, deep, apically usually deeper, first one often preapically strongly sunk, nearly groove-shaped; either crenulate or not; interstices on disc more or less convex, more convex apically, seventh and ninth joined each other preapically forming a strongly rised oblique fold. First segment of hind tarsi usually as long as superior apical spur of tibiae as well as following two or three combined. Fore tibiae distally tridentate and proximally faintly serrulate at outer margin; upper side nearly smooth. Middle and hind tibiae with rather strong transverse carinae on outer face; apically fimbriate with elongate and irregularly unequal spinules. Pygidium diffusedly and shortly pubescent; its apical margin with some cilia very elongate. Sexual dimorphism shown in males by feeble epistomal gibbosity and by less dense punctation of head and pronotum disc. Aedeagus with elongate paramera, apically acuminate. Epipharynx strongly sinuate at anterior margin, rounded at sides; epitorma elongately drop-shaped; corypha with a stout central spicula strongly protruding frontward; pedia densely and elongately pubescent frontward near apex of epitorma and with few short spines mixed; chaetopariae stout and rather sparsely arranged.

DISTRIBUTION. Palearctic, Oriental and Afrotropical region.

REMARKS. Mulsant & Rey (1870b: 610) described the genus *Oloperus* with *Aphodius nanus* Fairmaire, 1860 as type species by monotypy.

Said species-group taxon pertains surely to the genus *Plagiogonus* Mulsant, 1842 as stated, e.g., by Reitter (1892: 205) thus *Oloperus* must be considered junior synonym of the former.

Iablokov K. (1964: 63) described the subgenus *Eccoptaphodius* with *Aphodius avetissiani* sp. nov. from Mets, Ishkhansar, Armenia (type species by monotypy). The new genus-group taxon was distinguished from *Plagiogonus* mainly by subdentiform edge at apex of elytral suture. This dichotomical character, shared by several species of *Plagiogonus*, has to be considered of species-group value only. Moreover the original diagnosis and figured features of *Aphodius avetissiani* allow to consider *Eccoptaphodius* junior synonym of *Plagiogonus* as already stated by one of us (M. Dellacasa, 1988: 207).

Plagiogonus putridus (Geoffroy in Fourcroy, 1785) (figs 781, 783-785)

Scarabaeus putridus Geoffroy in Fourcroy, 1785: 12

Scarabaeus arenarius Olivier, 1789: 96

Scarabaeus rhododactylus Marsham, 1802: 29

Plagiogonus arenarius; Mulsant, 1842: 306

Aphodius (*Plagiogonus*) *rhododactylus*; Reitter, 1892: 204

Aphodius (*Plagiogonus*) *arenarius*; A. Schmidt, 1907b: 5

Aphodius putridus; Kloet & Hincks, 1977: 44

Aphodius (*Plagiogonus*) *putridus*; M. Dellacasa, 1988a (1987): 308

Plagiogonus putridus; Ádám, 1994: 14

TYPE LOCALITY: "Paris" [France] (conventional).

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (type not examined).

DESCRIPTION. Length 2.5-4 mm, obovate, convex, shiny, glabrous. Piceous; elytra chestnut-brown, apically paler; sometimes piceous-reddish, elytra pale reddish. Head with epistome feebly gibbous, finely sparsely punctured on disc, subrugose distally; clypeus strongly sinuate at middle, obtusely angulate at sides; genae rounded, feebly more protruding than eyes; frontal suture distinctly impressed. Pronotum transverse, doubly punctured, larger punctures umbilicate missing on sides; latter nearly parallel-sided, bordered frontward only; hind angles widely obtuse; base bisinuate, not bordered. Scutellum narrow, acuminate, faintly bordered at sides, smooth. Elytra strongly convex, widened posteriorly, denticulate at shoulder, auriculate at sutural apical angle; striae fine, sparsely punctured on disc, wider, deeper and more coarsely punctured toward apex; interstices nearly flat on disc, strongly convex apically, superficially microreticulate, finely and sparsely punctured. Hind tibiae superior apical spur shorter than first tarsal segment; latter nearly as long as following three combined. Male: epistome more feebly gibbous, sparsely punctured; pronotum relatively more sparsely punctured on disc. Female: epistome distinctly gibbous, more densely and coarsely punctured; pronotum relatively more densely punctured on disc.

DISTRIBUTION. Europe, Asia Minor.

REMARKS. About the citation of the author name for *Plagiogonus putridus* and, obviously, for other species described by Geoffroy (1762) and reelaborated by Fourcroy (1785), we have herein followed the conclusions of d'Aguilar & Raimbault (1990: 37-40) with which we totally agree.

Genus *PLANOLINUS* Mulsant & Rey, 1870

Aphodius (*Aphodius* section *Planolinus*) Mulsant & Rey, 1870b (1869): 426

Aphodius (*Planolinus*) Mulsant & Rey, 1871 (1870): 474; G. Dellacasa, 1983: 384

Aphodius (*Planolus*); Reitter, 1892: 195 (incorrect spelling for *Planolinus* and as synonym of *Agrilinus*)

Planolinus; Ádám, 1994: 13

TYPE SPECIES: *Scarabaeus fasciatus* Olivier, 1789 (primary homonym of *Scarabaeus fasciatus* Linné, 1758; valid name *Aphodius uliginosus* Hardy, 1847) (subsequent designation: G. Dellacasa, 1983).

DESCRIPTION. Small size species (length 3.5-5.5 mm), elongate, convex, moderately shiny, glabrous. Blackish; elytra usually reddish with more or less confluent blackish spots, rarely quite reddish. Head with epistome gibbous, more or less finely and regularly punctured; clypeus sinuate at middle, rounded or faintly angulate at sides, thickly bordered, border glabrous; genae rounded, sparsely but rather elongately ciliate, feebly more protruding than eyes; latter medium sized; frontal suture either more or less distinctly tuberculate or not. Pronotum distinctly, densely, regularly and moderately punctured, punctation sometimes coarser and rather irregular; base distinctly bordered. Scutellum small, more or less elongately triangular, distinctly microreticulate, irregularly

punctured. Elytra elongate or oval-elongate, sometimes subparallel-sided; finely striate; interstices flat or feebly convex. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side faintly punctured. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with spinules short and of equal length. Middle tibiae inferior apical spur not shortened in both sexes. Pygidium with rather dense, short and recumbent pubescence; its apical margin sparsely and rather elongately ciliate. Sexual dimorphism shown in males by fore tibiae apical spur relatively stouter and by less dense punctation of pronotal disc. Aedeagus with elongate paramera, apically obliquely truncate. Epipharynx feebly bisinuate at anterior margin; epitorma drop-shaped; corypha with apical elongate spiculae; pedia narrowly pubescent toward epitorma and with some short and stout spines sparsely and irregularly scattered; chaetopariae rather short and stout.

DISTRIBUTION. Holarctic region.

REMARKS. The genus *Planolinus* results unhomogeneous due to significant differences in aedeagal and epipharyngeal features of species, at present, ascribed to it.

At least, one can recognize within *Planolinus* three groups of species dichotomically distinguishable as follows:

- 1 – Frontal suture not at all tuberculate; elytra shiny group *uliginosus* Hardy
 - Frontal suture more or less distinctly trituberculate or, at least, with median distinct tubercle; elytra sericeous or partially strongly dull 2
- 2 – Epistome with anterior transverse carina; elytra strongly dull toward apex
 - group *borealis* Gyllenhal
 - Epistome without transverse carina; elytra sericeous group *vittatus* Say

Anyway the definition of said genus-group taxa should involve the systematic revision of all pertinent species-group taxa and that is out of the aims of this work.

Planolinus uliginosus (Hardy, 1847) (figs 782, 786-788)

Scarabaeus putridus Herbst, 1789: 160 (nec *Scarabaeus putridus* Geoffroy in Fourcroy, 1785)

Scarabaeus fasciatus Olivier, 1789: 90 (nec *Scarabaeus fasciatus* Linné, 1758)

Scarabaeus foetidus Fabricius, 1792: 40 (nec *Scarabaeus foetidus* Herbst, 1783)

Aphodius uliginosus Hardy, 1847: 382

Aphodius foetidus; Erichson, 1848: 817

Aphodius (*Planolinus*) *foetidus*; Mulsant & Rey, 1871 (1870): 474

Aphodius (*Planolinus*) *fasciatus*; G. Dellacasa, 1983: 386

Aphodius (*Planolinus*) *uliginosus*; M. Dellacasa, 1988a (1987): 308

Planolinus uliginosus; Ádám, 1994: 13

TYPE LOCALITY: Berwickshire [Great Britain].

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 3.5-4.5 mm, obovate, convex, feebly widened posteriorly, shiny, glabrous. Head with epistome distinctly gibbous, regularly and sparsely punctured; clypeus feebly sinuate at middle, obtusely rounded at sides; genae rounded, rather

distinctly more protruding than eyes; frontal suture distinctly impressed, at most feebly trigibbous. Pronotum rather densely, regularly, and almost coarsely punctured; sides bordered; hind angles obtusely rounded; base distinctly bordered. Scutellum wide, distinctly microreticulate, coarsely and sparsely punctured on basal half. Elytra oval-elongate, feebly widened backward, regularly convex; striae fine, superficially punctured, feebly crenulate; interstices shiny, flat or nearly flat, finely and sparsely punctured. Hind tibiae superior apical spur shorter than first tarsal segment; latter nearly as long as following three combined. Male: frontal suture trigibbous; fore tibiae apical spur relatively stouter. Female: frontal suture distinct but without trace of gibbosities; fore tibiae apical spur slender.

DISTRIBUTION. Palearctic region.

Genus *PLATYDERIDES* A. Schmidt, 1916 **stat. nov.**

Aphodius (*Platyderus*) A. Schmidt, 1913: 122 (nec *Platyderus* Stephens, 1828, Col. Carabidae)

Aphodius (*Platydera*) A. Schmidt, 1913: 176 (incorrect spelling for *Platyderus*)

Aphodius (*Platyderides*) A. Schmidt, 1916: 99 (*nomen novum*); Balthasar, 1964: 47; G. Dellacasa & Gordon, 1988: 121

Aphodius (*Thaiaphodius*) Masumoto, 1991: 27; Červenka, 1995: 94 (as synonym of *Platyderides*)

TYPE SPECIES: *Aphodius arrowi* A. Schmidt, 1910 (subsequent designation: Balthasar, 1964).

DESCRIPTION. Rather large species (length 8-10 mm), elongate, convex, shiny, nearly glabrous. Piceous; clypeal margin, sides of pronotum and elytral apex paler. Head with epistome feebly gibbous, anteriorly transversely carinate, regularly punctured; clypeus sinuate at middle, rounded at sides, quite thinly bordered, border sparsely bristled; genae obtusely rounded, ciliate, more protruding than eyes; latter medium sized; frontal suture impressed, not tuberculate. Pronotum transverse, doubly punctured, broadly flattened at sides and feebly foveolate near front and hind angles; sides rounded, thickly bordered; hind angles rounded; base distinctly bordered. Scutellum small, triangular. Elytra elongate, not denticulate at shoulder, with distinct preapical callosity; epipleura strong; striae fine, deep, crenulate; interstices more or less convex, punctured, laterally serially subfoveolate, backward shortly and sparsely pubescent. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with elongate and irregularly unequal spinules. Pygidium with fine, dense and recumbent pubescence, mixed several straight and very elongate setae; its apical margin densely and rather elongately ciliate. Sexual dimorphism shown in males mainly by fore tibiae narrower, elongate, inwardly widened apically; their apical spur hooked at tip and downward bent; inferior apical spur of mesotibiae short, spatulate and apically truncate. Aedeagus with paramera longer than tegmen, dorsally incavate, apically rounded and membranous. Epipharynx transverse, regularly rounded at sides, with anterior margin widely concave, epitorma drop-shaped, with strong unequal spiculae protruding beyond front margin;

chaetopariae strong, rather elongate and dense; pedia densely pubescent with some strong spines arranged in more or less regular belts.

DISTRIBUTION. Eastern Palearctic and Oriental region.

REMARKS. Neither Nearctic nor Neotropical as well as most of other species till now ascribed to *Platyderides* pertain to this genus-group taxon.

K. Masumoto (1991) described the subgenus *Thaiaphodius* with *Aphodius doiangkhangensis* sp. nov. (Doi, Inthanon, Chiang Mai prov., northwest Thailand), as type species by original designation. The study of a male paratype of said taxon allows to consider *Thaiaphodius* junior synonym of *Platyderides* as already stated by Červenka (1995: 94).

Platyderides arrowi (A. Schmidt, 1910) **n. comb.** (figs 789-791, 792)

Aphodius arrowi A. Schmidt, 1910c: 353

Aphodius (Platyderus) arrowi; A. Schmidt, 1913: 122

Aphodius (Platyderides) arrowi; A. Schmidt, 1922: 45; G. Dellacasa & Gordon, 1988a: 122

TYPE LOCALITY: Da-laen-saen [China].

TYPE DEPOSITORY: Natural History Museum. London (type male examined).

DESCRIPTION. Length 8-10 mm, elongate, subparallel-sided, convex, rather shiny; nearly glabrous, interstices only apically shortly and sparsely pubescent. Piceous-brownish; clypeus, side of pronotum and tarsi reddish; antennal club blackish. Head with epistome moderately convex, shiny, distinctly and regularly punctured, anteriorly more or less strongly carinate; clypeus sinuate at middle, rounded at sides; genae obtusely rounded, more protruding than eyes; frontal suture not tuberculate. Pronotum transverse, moderately convex, strongly shiny, broadly flattened at sides with feeble impressions near front and hind angles; punctation double, large punctures mixed with many small, irregularly scattered ones; sides broadly rounded, strongly bordered; hind angles rounded; base feebly bisinuate, bordered. Scutellum small, elongate, flat, alutaceous, coarsely and evenly punctured in basal half, narrowly bordered at sides. Elytra elongate, subparallel-sided, moderately convex, with distinct subapical gibbosity, somewhat alutaceous; epipleura strong, visible from above; striae fine, deep, strongly crenulate; interstices more or less convex, sparsely punctured, with a lateral longitudinal row of large contiguous punctures, laterally and toward apex shortly and sparsely pubescent. Inferiorly shiny, abdominal segments dull, strongly microreticulate, with scattered setigerous punctures. Ventral surface of femora strongly and rather regularly punctured. Hind tibiae superior apical spur shorter than first tarsal segment. Male: epistome distinctly gibbous with strong, transverse carine; frontal suture distinctly impressed, slightly rised laterally; pronotum relatively more convex, transverse, more sparsely punctured on disc; elytral interstices more strongly convex; fore tibiae narrower, elongate, enlarged apically with apical spur stout, hooked at tip, curved downward; inferior apical spur of middle tibiae short, spatulate, truncate; apical spur of hind tibiae somewhat flattened, slightly rounded apically, nearly as long as inferior one and of half length of first tarsal segment, latter nearly as long as following three combined; metasternal plate glabrous, shiny, broadly impressed and smooth at middle, distinctly

and irregularly punctured laterally, each side with smooth and convex longitudinal area bordered by some large punctures and with two distinct, rounded gibbosities anteriorly. Female: epistome nearly flat with transverse carina relatively weaker; frontal suture very fine; pronotum less convex, somewhat narrowed toward front, more densely punctured on disc; elytral interstices less convex; apical spur of fore tibiae regularly acuminate; inferior apical spur of middle tibiae regularly acuminate apically, as long as superior one; superior spur of hind tibiae apically acuminate, longer than inferior one, as long as two thirds of first segment of hind tarsi, latter as long as following two combined; metasternal plate nearly flat, with feeble longitudinal groove at middle, strongly and irregularly punctured.

DISTRIBUTION. The species is so far known from type locality only.

Genus *PLEURAPHODIUS* A. Schmidt, 1913

Aphodius (*Pleuraphodius*) A. Schmidt, 1913: 121; Balthasar, 1964: 42; M. Dellacasa, 1988a (1987): 181

Pleuraphodius; Paulian, 1942: 26

Aphodius (*Aphodius* Artengruppe *Pleuraphodius*); Endrödi, 1960b: 108

Aphodius (Artengruppe *Pleuraphodius*); Endrödi, 1964a: 62

Aphodius (group *Pleuraphodius*); Endrödi & Rakovič, 1981: 39

TYPE SPECIES: *Aphodius mutilus* A. Schmidt, 1911 (subsequent designation: Paulian, 1942).

DESCRIPTION. Small size species (length 3-5 mm), oval-elongate, convex, shiny, glabrous. More or less dark brownish; lateral margins of pronotum, elytra and legs paler. Head narrowed frontward; epistome gibbous, punctured; clypeus sinuate at middle, rounded at sides, thinly bordered, border glabrous; genae obtusely rounded, very shortly ciliate, more protruding than eyes; latter medium sized; frontal suture impressed, not tuberculate. Pronotum transverse, punctured, sides subparallel toward base; hind angles obliquely truncate; lateral margins and base bordered. Scutellum small, pentagonal with sides parallel toward base, as wide, at most, as first two elytral interstices basally. Elytra denticulate at shoulder; striae punctured, finely bordered at each side, first one as wide as second apically; interstices at middle more or less strongly convex or cariniform and laterally more or less widely strongly microreticulate, simulating a median primary and two lateral secondary interstices. Fore tibiae distally tridentate and proximally slightly serrulate at outer margin; upper side coarsely, rather densely and regularly punctured. Middle and hind tibiae with two distinct transverse carinae on outer face; apically fimbriate with stout and progressively unequal spinules. Pygidium with two or four discal setae; its apical margin with few elongate cilia. Sexual dimorphism shown in males by hind tibiae inferior margin longitudinally fimbriate with a row of short and dense setae. Aedeagus with paramera short and stout. Epipharynx transverse; anterior margin ciliate and deeply sinuate at middle; epitorma triangular; corypha with two apical spiculae stout and elongate; pedia pubescent with some stout chaetae laterally mixed; chaetopariae dense and rather elongate.

DISTRIBUTION. Afrotropical, Oriental and Palearctic region.

REMARKS. As at present taxonomically defined, *Pleuraphodius* is indeed polyphyletic. M. Dellacasa (1991: 34) recorded seventy six species pertaining to it, from Afrotropical, Oriental, Neotropical and Australian region, mainly due to the particular conformation of elytral interstices. The median part of latter is considered primary interstice, the lateral ones, with different sculpture, secondary interstices. Primary and secondary interstices, beyond different sculpture, are limited each side by a longitudinal row of punctures or by a striola.

We retain that this character is a purely morphological convergence also though it is always considered of primary importance in systematics of the genus-groups of Aphodiini.

As herein redefined should pertain to *Pleuraphodius*, as far as we know, Afrotropical species only and consequently many taxa till now ascribed to said genus have to be transferred to other already known or eventually new genera.

Pleuraphodius mutilus (A. Schmidt, 1911) (figs 793, 796-798)

Aphodius mutilus A. Schmidt, 1911a: 17

Aphodius (Pleuraphodius) mutilus; A. Schmidt, 1913: 121; M. Dellacasa, 1988a (1987): 394

Pleuraphodius mutilus; Paulian, 1942: 27

TYPE LOCALITY: Ulundi, Natal [South Africa].

TYPE DEPOSITORY: Naturhistoriska Riksmuseet. Stockholm (lectotype male, designated by Landin *in litteris*, examined).

DESCRIPTION. Length 3-4.5 mm, oval-elongate, convex, shiny, glabrous. Brown-blackish or brown reddish. Head with epistome gibbous, simply, regularly punctured; clypeus sinuate at middle, widely rounded at sides; genae obtusely rounded, more protruding than eyes; frontal suture distinctly impressed, not tuberculate. Pronotum transverse, doubly punctured; smaller punctures somewhat finer and sparser than those on head and throughout scattered; large punctures, twice to four times larger than small punctures, rather irregular, placed around disc, sparser on sides and toward base; lateral margins thinly bordered; hind angles feebly truncate but inward sinuate; base not bordered with few short pale setae at scutellum level. Scutellum narrow, subparallel-sided at basal third. Elytra with rather strong humeral denticle; striae wide, finely bordered, distinctly crenulate; primary median interstice shiny and tectiform with a more or less regular longitudinal row of punctures at each side; secondary lateral interstices strongly microreticulate. Fore tibiae apical spur regularly acuminate toward apex in both sexes. Hind tibiae superior apical spur a fourth shorter than first tarsal segment; latter slightly longer than following two combined. Abdominal sternites rather coarsely punctured, finely pubescent; apical one with some straight setae. Pygidium finely pubescent with four straight setae elongate like those of apical sternite. Male: inferior margin of hind tibiae fringed with a longitudinal row of short dense setae. Female: inferior margin of hind tibiae nearly glabrous.

DISTRIBUTION. South Africa (Natal and Transvaal).

Genus *PODOTENOIDES* Paulian, 1942*Podotenoides* Paulian, 1942: 46*Aphodius* (*Aphodius* Artengruppe *Podotenoides*); Endrödi, 1960b: 141*Aphodius* (Artengruppe *Podotaenoides* [sic]); Endrödi, 1964a: 139*Aphodius* (*Podotenoides*); M. Dellacasa, 1988a (1987): 253

TYPE SPECIES: *Podotenoides jeanneli* Paulian, 1942 [nec *Aphodius jeanneli* Paulian, 1938; valid name *Aphodius jeannelianus* Balthasar, 1945, *nomen novum conservandum*] (original designation).

DESCRIPTION. Medium size species (5.5-6.5 mm), rather elongate, convex, head and pronotum shiny, elytra dull; sides of pronotum and elytral interstices shortly pubescent. Dark brownish. Head with epistome gibbous, punctured; clypeus moderately sinuate at middle, rounded at sides, bordered, border not bristled; genae obtusely rounded, shortly ciliate, more protruding than eyes; latter medium sized; frontal suture distinctly impressed, not tuberculate. Pronotum transverse, punctured; lateral margins bordered; hind angles obliquely truncate; base not bordered, with a series of contiguous short setae. Scutellum small, pentagonal with sides parallel toward base. Elytra distinctly denticulate at shoulder, striae punctured and finely bordered; interstices dull, flat, with a narrow median carina, faint toward apex. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side coarsely, densely and rather regularly punctured. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with stout and irregularly unequal spinules. Middle and hind tarsi longer than respective tibiae. Hind tibiae superior apical spur shorter than first tarsal segment. Pygidium finely pubescent with four straight and elongate setae. Sexual dimorphism shown in males by metasternal plate more deeply incavate and less densely punctured. Aedeagus with rather elongate and slender paramera, feebly curved apically. Epipharynx transverse; anterior margin sinuate; epitorma drop-shaped; corypha with two strong apical spiculae; pedia pubescent with some rather stout chaetae antero-laterally mixed; chaetopariae short, rather dense and elongate.

DISTRIBUTION. Afrotropical region.

Podotenoides jeannelianus (Balthasar, 1945) **n. comb.** (figs 794, 799-801)*Podotenoides Jeanneli* [sic] Paulian, 1942: 46 (nec *Aphodius* (*Balthasarianus*) *Jeanneli* Paulian, 1938)*Aphodius* (*Podotenoides*) *jeannelianus* Balthasar, 1945a: 166 (*nomen novum conservandum*); M. Dellacasa, 1988a (1987): 328, 395*Aphodius* (Artengruppe *Podotaenoides* [sic!] *jeannelianus*); Endrödi, 1964a: 139

TYPE LOCALITY: Naivasha, 1900 m, Rift Valley, Kenya.

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (type examined).

DESCRIPTION. Length 5.5-6.5 mm, rather elongate, convex; head and pronotum shiny, elytra dull; sides of pronotum and elytral interstices shortly pubescent. Dark brown; head anteriorly, sides of pronotum and sometimes also elytra paler; legs brown-reddish. Head with epistome gibbous, finely, rather densely and nearly regularly punctured; punctation finer and sparser at centre; clypeus feebly sinuate at middle, widely rounded

at sides; genae obtusely rounded, more protruding than eyes; frontal suture finely impressed, not tuberculate. Pronotum transverse; punctured; punctation regular and dense on disc, coarser and denser on sides, here each puncture with short, backwardly recumbent, pale hair; lateral margins rounded at anterior half, subparallel toward base; hind angles truncate and distinctly inward sinuate; base not bordered, shortly bristled. Scutellum with some small punctures on basal half, at base nearly as wide as first two elytral interstices. Elytra rather strongly denticulate at shoulder; striae narrowly shiny at bottom, distinctly crenulate but, apically, punctures smaller and visible only at middle; interstices distinctly microreticulate, with narrow, feebly raised, shiny median carina, lacking on lateral ones and faint toward apex; finely punctured, punctures with short, backwardly recumbent pale hairs. Hind tibiae superior apical spur distinctly shorter than first tarsal segment; latter as long as following three combined. Male: metasternal plate relatively more deeply incavate and less densely punctured. Female: metasternal plate nearly flat and more densely punctured.

DISTRIBUTION. Kenya (Mount Elgon, Mounts Aberdare).

REMARKS. Balthasar (1945) downgraded *Podotenoides* to subgenus rank and consequently the species-group name *jeanneli* Paulian, 1942 became junior secondary homonym of *jeanneli* Paulian, 1938. For the former Balthasar himself (1945) proposed the new name *jeannelianus*.

Genus *PODOTENUS* A. Schmidt, 1913

Aphodius (*Podotenus*) A. Schmidt, 1913: 137; M. Dellacasa, 1988a (1987): 253; G. Dellacasa, 1990c: 145

Trogaphodius Balthasar, 1965: 311; Petrovitz, 1971b: 101 (as synonym of *Podotenus*)

Podotenus; Stebnicka & Howden, 1994: 18

TYPE SPECIES: *Aphodius insignior* Blackburn, 1904 (subsequent designation: M. Dellacasa, 1988).

DESCRIPTION. Rather medium size species (length 4-7 mm), moderately convex, feebly shiny, pubescent. Testaceous, piceous or blackish, sometimes elytra yellowish; legs dark testaceous. Head with epistome nearly flat; clypeus anteriorly truncate, distinctly bordered, border laterally bristled; genae obtuse, elongate and densely ciliate, more protruding than eyes; latter rather large; frontal suture impressed, not tuberculate. Pronotum more or less densely punctured, with a longitudinal groove on disc, more or less foveolate at sides before hind angles; base strongly bisinuate, not bordered. Scutellum small, triangular with curved sides. Elytra elongate, somewhat widened posteriorly; with fine striae; interstices nearly flat and dull, odd ones somewhat shiny and sometimes provided with raised tubercles irregularly scattered. Fore tibiae proximally not serrulate at outer margin; upper side faintly punctured. Middle and hind tibiae with rather strong transverse carinae on outer face; apically fimbriate with elongate and irregularly unequal spinules. Tarsi slender, strongly elongate. Pygidium with few, elongate and straight setae; its apical margin sparsely but elongately ciliate. Sexual dimorphism shown in males mainly by fore tibiae bidentate at outer margin. Aedeagus elongate, with paramera apically acuminate and dorsally distinctly excavate.

Epipharynx more or less transverse and rounded at sides; epitorma cylindrical, widened anteriorly; corypha with strong apical spiculae protruding beyond front margin and with several short ones irregularly scattered at middle; chaetopariae enough dense, moderately elongate.

DISTRIBUTION. Australian and Neotropical region.

Podotenus insignior (Blackburn, 1904) (figs 795, 802-804)

Aphodius insignior Blackburn, 1904: 156

Aphodius (Podotenus) insignior; A. Schmidt, 1913: 137; M. Dellacasa, 1988a (1987): 145; G. Dellacasa, 1990c: 150 (lectotype designation)

Trogaphodius tuberculatus Balthasar, 1965: 312; Stebnicka & Howden, 1994: 22 (as synonym of *insignior*)

Podotenus insignior; Stebnicka & Howden, 1994: 22

TYPE LOCALITY: Swan River (South-western Australia).

TYPE DEPOSITORY: Natural History Museum. London (lectotype male examined).

DESCRIPTION. Length about 5 mm, elongate, moderately convex, feebly shiny, yellowish pubescent. Blackish, sides of pronotum, elytra blackish tuberculated and legs, testaceous. Head with epistome moderately convex, finely microreticulate so feebly shiny, sparsely and superficially punctured, punctures with yellowish hairs backwardly recumbent; clypeus anteriorly truncate, obtusely rounded at sides; genae angulate, thinly bordered, distinctly more protruding than eyes; frontal suture V-shaped, impressed, not tuberculate. Pronotum transverse, moderately convex, microreticulate so rather dull, sparsely and irregularly punctured, punctures with yellowish hairs backwardly recumbent, more dense laterally, punctation nearly lacking on disc; latter with feeble longitudinal groove; sides ciliate, rounded, widely flattened, near base distinctly excavate; hind angles obtuse; base strongly angulately bisinuate, not bordered, bristled laterally. Scutellum small, elongate, not punctured, feebly concave, strongly microreticulate thus rather dull. Elytra elongate, moderately convex, somewhat widened backward, laterally enough densely pubescent, preapically distinctly gibbous, apically widely flattened; epipleura strong, quite regularly ciliate; striae fine, superficially punctured, not crenulate; even interstices flat, distinctly microreticulate, rather dull, with a central irregular row of fine and shortly setigerous punctures; odd ones enough shiny, with several oval tubercles distinctly raised and posteriorly with dense yellowish tufts of hairs. Hind tibiae superior apical spur slightly shorter than first tarsal segment; latter longer than following three combined. Male: head relatively more wide and less convex; clypeus distinctly truncate anteriorly; pronotum with more superficial and sparse punctation; fore tibiae bidentate at outer margin, their apical spur downward bent. Female: head relatively narrower and more convex; clypeus anteriorly nearly rounded; pronotum more strongly and densely punctured; fore tibiae with three teeth at outer margin, their apical spur relatively slender and straight.

DISTRIBUTION. South-western Australia.

Genus *PSEUDACROSSUS* Reitter, 1892

Aphodius (*Pseudacrossus*) Reitter, 1892: 218; G. Dellacasa, 1983: 391

Pseudacrossus; Paulian, 1942: 88

Aphodius (Artengruppe *Pseudacrossus*); Endrödi, 1964b: 60

Aphodius (*Pseudoacrossus*) [sic]; Balthasar, 1964: 300

Aphodius (group *Pseudacrossus*); Endrödi & Rakovič, 1981: 54

Aphodius (*Serraphodius*) Kabakov & Frolov, 1996: 878 (**n. syn.**)

TYPE SPECIES: *Aphodius grombaczewskyi* D. Koshantschikov, 1891 (original designation).

DESCRIPTION. Medium size species (length 5-8 mm), oblong, moderately convex, more or less shiny, nearly glabrous or shortly pubescent. Blackish; elytra piceous, brownish, reddish or yellowish, rarely brown-yellowish with blackish spots. Head with epistome gibbous, densely, sometimes distally, rugosely punctured; clypeus sinuate at middle, rounded at sides, thinly bordered, border glabrous and feebly upturned; genae obtusely rounded, elongately ciliate, more protruding than eyes; latter medium sized; frontal suture distinctly and more or less strongly tuberculate. Pronotum transverse, rather convex, coarsely punctured, bordered at base. Scutellum small, triangular, punctured. Elytra convex; striae wide, superficial, more or less distinctly crenulate; interstices flat or moderately convex, finely or coarsely punctured, sometimes punctures confluent toward apex and more or less diffusedly and shortly pubescent. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with elongate and irregularly unequal spinules. Pygidium with sparse, rather elongate and recumbent pubescence, mixed few straight setae; its apical margin sparsely and elongately ciliate. Sexual dimorphism shown in males by more distinct tubercles of frontal suture; by fore tibiae apical spur stout, downwardly and outwardly curved; by middle tibiae inferior apical spur shortened and apically subtruncate. Aedeagus with rather elongate and slender paramera, usually rather strongly curved apically. Epipharynx feebly sinuate at front margin, widely rounded at sides; epitorma elongate, nearly conical; corypha usually with stout apical spiculae; pedia densely pubescent and with many spines irregularly scattered; chaetopariae rather short and dense.

DISTRIBUTION. Palearctic region.

REMARKS. Kabakov & Frolov (1996) described the new subgenus *Serraphodius* with *Aphodius circassicus* Reitter, 1892 type species by original designation. This taxon was till at time considered pertaining to subgenus *Pseudacrossus*.

Neither aedeagal nor epipharyngeal features are sufficiently significant to discriminate the new genus-group taxon from *Pseudacrossus* thus we consider *Serraphodius* junior synonym of the former.

Adversely it may be that *Aphodius lederi* Harold, 1876 and *Aphodius leisteri* Medvedev, 1968 do not pertain to the new genus as stated by said authors.

Pseudacrossus grombaczewskyi (D. Koshantschikov, 1891) **n. comb.** (figs 805, 809-811)

Aphodius (*Amidorus*) *grombaczewskyi* D. Koshantschikov, 1891: 439

Aphodius (*Pseudacrossus*) *grombaczewskyi*; Reitter, 1892: 218; Nikritin, 1974: 466 (*bona species*); G. Dellacasa, 1983: 394

Aphodius (Agolius) przewalskyi ssp. *grombczewskyi*; W. Koshantschikov, 1911b: 205

Aphodius (Pseudagolius) przewalskyi var. *grombczewskyi*; A. Schmidt, 1913: 150

TYPE LOCALITY: Turkestan: Alai [Turkmenistan].

TYPE DEPOSITORY: Zoologicheskij Institut, R. A. N. St. Petersburg (type examined).

DESCRIPTION. Length 6-8 mm, oblong, convex, moderately shiny, nearly glabrous, elytra shortly pubescent apically. Head with epistome gibbous, coarsely and, distally, subrugosely punctured; clypeus distinctly sinuate at middle, rounded at sides; genae obtuse, more protruding than eyes; frontal suture weakly but distinctly trituberculate. Pronotum moderately convex, transverse, superficially microreticulate so rather shiny; coarsely, irregularly and rather densely punctured, somewhat depressed laterally before hind angles; sides distinctly bordered, ciliate; hind angles obtusely rounded; base bisinuate, thinly bordered. Scutellum distinctly microreticulate so rather dull, coarsely punctured. Elytra elongate, nearly parallel-sided; striae fine, feebly crenulate; interstices nearly flat, microreticulate, moderately shiny, sparsely distinctly punctured, apically very shortly sparsely pubescent. Hind tibiae superior apical spur longer than first tarsal segment; latter nearly as long as following two combined. Male: pronotum not narrowed frontward; fore tibiae apical spur stout, strongly curved downward and outward; middle tibiae inferior apical spur shortened, apically subtruncate. Female: pronotum narrowed frontward; fore tibiae apical spur slender, nearly straight, middle tibiae inferior apical spur elongate and apically acuminate.

DISTRIBUTION. Central Asia.

Genus *PSEUDAGOLIINUS* Bordat, 1994 **stat. nov.**

Aphodius (Pseudagoliinus) Bordat, 1994: 25

TYPE SPECIES: *Aphodius sinuatipes* Bordat, 1994 (original designation).

DESCRIPTION. Small size species (length 4-4.5 mm), rather stout, convex, shiny, glabrous. Piceous. Head with epistome gibbous, anteriorly transversely carinate, irregularly punctured; clypeus sinuate at middle, obtusely rounded at sides, bordered, border glabrous and feebly upturned anteriorly; genae obtusely rounded, sparsely ciliate, more protruding than eyes; latter rather small; frontal suture trituberculate. Pronotum transverse, doubly punctured, quite bordered; hind angles truncate. Scutellum small, triangular. Elytra with small denticle at shoulder; striae rather fine, punctured, first one as wide as second apically; interstices convex, apically subcariniform and sharply bordered at each side. Fore tibiae distally tridentate and proximally feebly serrulate at outer margin; upper side smooth. Middle and hind tibiae with rather distinct transverse carinae on outer face; apically fimbriate with short and equal spinules. Pygidium with some straight setae, sparse on disc more dense distally. Sexual dimorphism shown in males by more raised tubercles of frontal suture; by inferior apical spur of middle tibiae shortened and apically incurvate, by hind tibiae widened with outer carinae reduced. Aedeagus with rather short paramera, apically curved. Epipharynx transverse; anterior margin sinuate at each side; epitorma rather widely triangular; corypha with six apical

spiculae, median two stouter and strongly elongate; pedia pubescent with subserially mixed several stout spines; chaetopariae strong; tormae elongate.

DISTRIBUTION. Southern Afrotropical region.

Pseudagoliinus sinuatipes (Bordat, 1994) **n. comb.** (figs 806, 812-814)

Aphodius (*Pseudagoliinus*) *sinuatipes* Bordat, 1994: 25

TYPE LOCALITY: SW Cape Good Hope nat. Res., South Africa.

TYPE DEPOSITORY: South African Museum. Cape Town (holotype male examined).

DESCRIPTION. Length 4-4.5 mm; rather stout, convex, shiny, glabrous. Brown-blackish, front margin of pronotum shadowy reddish. Head with epistome frontward with a transverse arcuate carina, doubly irregularly punctured; punctation simple, fine and sparse on disc, anteriorly and laterally rather dense with mixed some rugulae or few granula; clypeus distinctly sinuate at middle, obtusely rounded at sides, quite bordered, border feebly upturned anteriorly, not bristled; genae obtusely rounded, sparsely ciliate; more protruding than eyes; frontal suture finely impressed, median tubercle transverse, lateral ones weaker; front with relatively coarser and denser punctures. Pronotum transverse, doubly punctured; smaller, regular, fine and rather dense punctures throughout scattered except at centre of disc and on basal half; large punctures, three to five times larger than small punctures, irregular, very sparse on disc but rather dense near lateral callus; lateral margins subparallel-sided toward base; hind angles obliquely truncate, not sinuate inward; quite bordered. Scutellum regularly oval; at base as wide as first two elytral interstices. Elytra broadly oval, with small humeral denticle; striae rather fine, distinctly crenulate; interstices microreticulate and feebly convex on disc; toward apex striae wider and interstices subcariniform and sharply bordered at each side. Fore tibiae with inferior carina finely denticulate, their apical spur rather stout and apically acuminate. Hind tibiae superior apical spur slightly shorter than first tarsal segment; latter as long as following two combined. Male: tubercles of frontal suture relatively stronger, median one bifid at tip; middle tibiae with a small tuft of setae at inner margin, their inferior apical spur shortened and apically incurvate; hind femora with a transverse belt of setigerous punctures near posterior margin; hind tibiae strongly widened, nearly spatulate apically and with a longitudinal row of setigerous punctures near inner margin. Female: tubercles of frontal suture weaker and transverser; middle tibiae inferior apical spur regularly elongate; hind tibiae normally shaped.

DISTRIBUTION. Cape of Good Hope (South Africa).

Genus *PSEUDAGOLIUS* A. Schmidt, 1913 **stat. nov.**

Aphodius (*Pseudagolius*) A. Schmidt, 1913: 150; Balthasar, 1964: 300 (as synonym of *Pseudacrossus*); G. Dellacasa, 1983: 403

TYPE SPECIES: *Aphodius coloradensis* Horn, 1870 (subsequent designation: G. Dellacasa, 1983).

DESCRIPTION. Medium size species (length 6-7.5 mm), oval-elongate, convex, shiny, glabrous. Piceous or brownish; elytra often reddish, rarely brown-reddish with dark

spots. Head with epistome gibbous, subrugosely punctured, punctation distally more coarse; clypeus sinuate at middle, obtusely angulate at sides, thinly bordered, border elongately ciliate; genae angulate, sparsely ciliate, distinctly more protruding than eyes; latter medium sized; frontal suture distinct, not tuberculate. Pronotum transverse, doubly and irregularly punctured; sides and base distinctly bordered. Scutellum small, triangular. Elytra elongate, slightly widened posteriorly; striae deep, distinctly crenulate; interstices nearly flat, sparsely punctured. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with elongate and irregularly unequal spinules. Pygidium with rather sparse, elongate and recumbent pubescence; its apical margin elongately ciliate. Sexual dimorphism shown in males mainly by middle tibiae inferior apical spur shortened and apically hooked. Aedeagus with elongate paramera, strongly curved and acuminate apically. Epipharynx distinctly sinuate at anterior margin, widely and regularly rounded at sides; epitorma rather drop-shaped; corypha with protruding apical spiculae, central ones strongly elongate; pedia densely pubescent toward epitorma and with short and strong spines irregularly scattered; chaetopariae dense and rather elongate.

DISTRIBUTION. Nearctic region and Mexican Transition Zone.

Pseudagolius coloradensis (Horn, 1870) **n. comb.** (figs 807, 815-817)

Aphodius coloradensis Horn, 1870: 130

Aphodius (*Pseudagolius*) *coloradensis*; A. Schmidt, 1913: 150; G. Dellacasa, 1983: 404

TYPE LOCALITY: Colorado [U.S.A.].

TYPE DEPOSITORY: Museum of Comparative Zoology, Harvard University. Cambridge, MA (U.S.A) (type not examined).

DESCRIPTION. Length 6-7.5 mm, oval-elongate, convex, strongly shiny, glabrous. Quite piceous-brownish; antennae reddish-testaceous. Head with epistome gibbous, sparsely and superficially punctured on disc, punctation distally confluent and subrugose; clypeus broadly sinuate at middle, subdenticulate at sides; genae subacute, moderately more protruding than eyes; frontal suture distinct, not tuberculate. Pronotum strongly shiny, moderately convex, transverse; coarsely, sparsely, doubly and irregularly punctured, larger punctures faintly umbilicate; sides rounded, ciliate, distinctly bordered; hind angles obtusely rounded; base bisinuate, thinly but distinctly bordered. Scutellum ogival, irregularly punctured basally, superficially microreticulate. Elytra strongly convex, shiny, slightly widened posteriorly; striae deep and crenulate; interstices nearly flat, finely microreticulate, sparsely but distinctly punctured. Hind tibiae superior apical spur nearly as long as first tarsal segment; latter somewhat longer than following two combined. Male: inferior apical spur of middle tibiae shortened and apically hooked; pronotum relatively more transverse and less convex, more sparsely punctured on disc. Female: inferior apical spur of middle tibiae shortened but regularly acuminate apically; pronotum relatively narrower frontward and more densely punctured on disc.

DISTRIBUTION. Canada; Western U.S.A. (from Colorado to New Mexico); Mexican Transition Zone.

Genus *PSEUDESYMUS* Orbigny, 1896 **stat. nov.**

Aphodius (*Pseudesymus*) d'Orbigny, 1896a: 218; A. Schmidt, 1913: 169 (as synonym of *Calamosternus*); Hollande & Thérond, 1999 (1998): 87 (as valid subgenus)

TYPE SPECIES: *Aphodius lucidus* Klug, 1845 (monotypy).

DESCRIPTION. Rather small species (length 4.5-6 mm), subcylindrical, elongate, convex, shiny, glabrous. Head and pronotum blackish; elytra yellowish with juxtasutural interstice brownish. Head with epistome feebly gibbous, more or less coarsely punctured; clypeus sinuate at middle, widely rounded at sides, thinly bordered, border glabrous; genae obtusely rounded, ciliate, feebly more protruding than eyes; latter medium sized; frontal suture with strong median tubercle. Pronotum transverse, convex, doubly punctured; sides rounded, thinly bordered; hind angles more or less widely rounded; base bordered. Scutellum small, pentagonal, parallel-sided toward base. Elytra elongate, subparallel-sided, not denticulate at shoulder; finely punctato-striate; striae crenulate; interstices flat, punctulate. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side sparsely but distinctly punctured. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with short and equal spinules. Hind tibiae superior apical spur shorter than first tarsal segment. Pygidium with sparse and straight pubescence; its apical margin finely, rather sparsely and elongately ciliate. Sexual dimorphism shown in males by epistome simply, regularly punctured; pronotum not narrowed frontward and more sparsely punctured. Aedeagus with paramera with wide membranous processes apically. Epipharynx transverse; feebly bisinuate and densely, elongately pubescent at front margin; epitorma drop-shaped; corypha with several rather stout spiculae protruding beyond front margin; pedia densely pubescent, with irregularly mixed few stout spines; chaetopariae rather short and densely arranged.

DISTRIBUTION. Palearctic region.

REMARKS. Several species ascribed to *Esymus* and to *Calamosternus* might pertain to this genus-group taxon as herein redefined.

Pseudesymus lucidus (Klug, 1845) **n. comb.** (figs 808, 818-820)

Aphodius lucidus Klug in Ehrenberg, 1845: n. 2

Aphodius (*Calamosternus*) *lucidus*; Reitter, 1892: 190; A. Schmidt, 1913: 169

Aphodius (*Pseudesymus*) *lucidus*; d'Orbigny, 1896a: 218; Hollande & Thérond, 1999 (1998): 87

TYPE LOCALITY: Ras-et-tin, Alex. [Egypt].

TYPE DEPOSITORY: Zoologisches Museum, Humboldt Universität. Berlin (type not examined).

DESCRIPTION. Length 4.5-6 mm, elongate, subcylindrical, convex, shiny, glabrous. Head and pronotum black; latter with front angles testaceous; scutellum blackish; elytra pale yellow with juxtasutural interstice dark brown; legs reddish; antennal club yellowish. Head with epistome nearly flat, rather densely and distinctly punctured; clypeus feebly

sinuate at middle, widely rounded at sides; genae obtusely rounded, feebly more protruding than eyes; frontal suture tuberculate. Pronotum transverse, strongly convex, doubly punctured; larger punctures irregularly scattered; sides rounded, thinly bordered, sparsely and elongately ciliate near front angles; hind angles rather widely rounded; base thinly bordered. Scutellum microreticulate, distinctly and irregularly punctured. Elytra elongate, subparallel-sided, not denticulate at shoulder; finely and rather superficially striate; striae distinctly punctured, subcrenulate; interstices flat, very finely and irregularly punctured; punctures somewhat denser toward apex. Hind tibiae superior apical spur shorter than first tarsal segment; latter nearly as long as following two combined. Male: epistome anteriorly rather finely and regularly punctured; median tubercle of frontal suture relatively stronger; pronotum widely transverse, relatively more convex and less densely punctured, larger punctures lacking on disc. Female: epistome anteriorly confusedly and subrugosely punctured; median tubercle of frontal suture relatively weaker; pronotum narrowed frontward, less convex and more densely and regularly punctured.

DISTRIBUTION. Canary Islands, Mediterranean Africa, Arabia, Central Asia.

Genus *PSEUDOHERMODONTUS* G. Dellacasa & M. Dellacasa, 1998

Pseudoahermodontus G. Dellacasa & M. Dellacasa, 1998 (1997): 407

TYPE SPECIES: *Psedoahermodontus benesi* G. Dellacasa & M. Dellacasa, 1998 (original designation).

DESCRIPTION. Small size species (length 5 mm); oblong, stout, strongly convex, shiny, glabrous. Black, clypeal margin and legs piceous, antennal club blackish. Head wide, convex; epistome quite rugosely punctured, anteriorly with short transverse carina; clypeus with four teeth distinctly upturned, rather finely bordered, border glabrous; genae obtusely rounded, shortly ciliate; feebly more protruding than eyes; latter medium sized; frontal suture obsolete. Pronotum strongly convex, subquadrate, doubly and coarsely punctured, larger punctures mixed with much smaller ones. Scutellum large, triangularly elongate, distinctly punctured. Elytra strongly convex, widened backward; striae deep, strongly punctured, feebly crenulate; interstices flat, finely and irregularly punctured. Fore tibiae distally tridentate and proximally faintly serrulate at outer margin; upper side smooth. Middle and hind tibiae with rather strong transverse carinae on outer face; apically fimbriate with spinules rather short and of equal length. Pygidium sparsely and shortly pubescent. Epipharynx strongly transverse, feebly bisinuate at front margin; epitorma wide campaniform; corypha strongly protruding frontward, apically with few stout, short spines; chaetopodia with few, stout, sparsely scattered spines; chaetopariae moderately elongate and rather densely arranged. Males unknown.

DISTRIBUTION. Palearctic region (Chinese province).

Pseudoahermodontus benesi G. Dellacasa & M. Dellacasa, 1998 (figs 821, 825)

Pseudoahermodontus benesi G. Dellacasa & M. Dellacasa, 1998 (1997): 409

TYPE LOCALITY: Wenxian env., South Gansu, China.

TYPE DEPOSITORY: Museo regionale di Storia naturale. Turin (holotype female examined)

DESCRIPTION. Length 5 mm; oblong, stout, strongly convex, shiny, glabrous. Black, clypeal margin and legs piceous; antennal club blackish. Head wide; epistome convex, quite coarsely and rugosely punctured, anteriorly with short transverse carina; clypeus quadridentate, inner teeth stronger than lateral ones, all distinctly upturned; genae obtusely rounded, feebly more protruding than eyes; frontal suture obsolete, not at all tuberculate. Pronotum subquadrate, strongly convex, doubly, coarsely and rather regularly punctured; larger punctures slightly cribose at center, mixed with much smaller ones; sides subparallel, not bordered, shortly and sparsely ciliate frontward; hind angles obtusely rounded; base not bordered but marked by a transverse belt of contiguous coarse punctures arranged in a way to simulate a sort of edge. Scutellum nearly flat, elongate, distinctly and regularly punctured. Elytra strongly convex, widened backward; epipleura cariniform at shoulder; latter not denticulate; striae deep, wide, distinctly punctured but feebly crenulate; interstices nearly flat, sparsely and irregularly punctured. Hind tibiae superior apical spur as long as first tarsal segment; latter as long as following three combined. Male unknown.

DISTRIBUTION. China.

REMARKS. Besides the holotype, we had the opportunity to examine another female specimen from "Umg. Jiuzhaigou, Sichuan, China, 2400 m; 29.07.1996; leg. Heinz", preserved in David Král collection (Prague).

Genus *PSEUDOPHARAPHODIUS* Bordat, 1990 **stat. nov.**

Aphodius (*Pseudopharaphodius*) Bordat, 1990b: 76; M. Dellacasa, 1988a (1987): 347

TYPE SPECIES: *Aphodius anthrax* Gerstaecker, 1871 (original designation).

DESCRIPTION. Small size species (length 2.5-5 mm) elongate, convex, rather shiny; glabrous; sometimes elytra finely pubescent laterally and toward apex. Brown-reddish or brown-blackish; sometimes clypeus and sides of pronotum reddish. Head narrowed frontward; epistome gibbous, doubly punctured; clypeus faintly sinuate at middle, widely rounded at sides, bordered, border very shortly bristled; genae quite rounded, shortly ciliate, not more protruding than eyes; latter medium sized; frontal suture impressed, not tuberculate. Pronotum transverse, not bordered at front margin, doubly punctured; sides rounded, thinly bordered; hind angles obliquely truncate; base not bordered. Scutellum small, pentagonal, at base nearly as wide as first two elytral interstices. Elytra subparallel-sided, with a very small humeral denticle at shoulder; punctato-striate; first stria as wide as second apically; interstices feebly convex on disc, strongly convex toward apex; first six ones not joined among them apically. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side coarsely and densely punctured. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with spinules stout and progressively unequal. Hind tibiae superior apical spur shorter than first tarsal segment. Pygidium with some elongate and straight, pale setae. Sexual dimorphism shown in males by pronotum not narrowed frontward and relatively less densely punctured on disc. Aedeagus with short and stout paramera,

apically either ciliate or not. Epipharynx widely transverse; anterior margin ciliate and sinuate at middle; epitorma conical; corypha with two stout elongate apical spiculae; pedia densely pubescent, with some stout spines mixed; paria with a pubescent areola at middle of lateral margins; chaetopariae short, elongate and densely arranged.

DISTRIBUTION. Afrotropical region, Madagascar.

Pseudopharaphodius anthrax (Gerstaecker, 1871) **n. comb.** (figs 822-824, 826)

Aphodius anthrax Gerstaecker, 1871: 47

Aphodius (*Paraphodius* [sic]) *anthrax*; A. Schmidt, 1913: 125

Pharaphodius anthrax; Paulian, 1942: 37

Aphodius (*Aphodius* Artengruppe *Pharaphodius*) *anthrax*; Endrödi, 1960b: 140

Aphodius (*Pseudopharaphodius*) *anthrax*; M. Dellacasa, 1988a (1987): 248; Bordat, 1990b: 76

TYPE LOCALITY: Uru [env. Moshi, Tanzania (Y. Cambefort, *in verbis*)].

TYPE DEPOSITORY: Zoologisches Museum, Humboldt Universität. Berlin (lectotype male examined).

DESCRIPTION. Length 3-4 mm, convex, elongate, shiny; nearly glabrous. Brown-blackish, sometimes brown-reddish. Head with epistome gibbous, doubly punctured; smaller, fine, regular and rather dense punctures throughout scattered; large punctures, twice to four times larger than small punctures, more irregular and distally placed only; clypeus finely bordered, border slightly thicker laterally; genae rounded, not more protruding than eyes; frontal suture impressed, not tuberculate; front distinctly and doubly punctured, larger punctures only laterally scattered. Pronotum moderately transverse, doubly punctured; smaller punctures like those on head; large punctures, four to six times larger than small punctures, irregularly sparse, denser on sides; lateral margins feebly rounded, thinly bordered; hind angles truncate, not inward sinuate; base feebly bisinuate, not bordered. Scutellum superficially bisulcate on sides, with some small punctures on basal half. Elytra subparallel-sided, microreticulate so moderately shiny, with very small humeral denticle; striae crenulate, fine on disc, wider toward apex and here their punctures visible at bottom only; interstices feebly convex on disc, narrower and more convex laterally and toward apex, finely and sparsely punctured, lateral superficial punctures shortly setigerous. Hind tibiae superior apical spur slightly shorter than first tarsal segment; latter as long as following three combined. Male: pronotum not narrowed frontward, relatively more convex and less densely punctured on disc. Female: pronotum narrowed frontward, less convex and more densely punctured on disc.

DISTRIBUTION. Eastern Afrotropical region (from Ethiopia to South Africa), Namibia.

Genus *PSEUDOPODOTENUS* G. Dellacasa, 1990 **stat. nov.**

Aphodius (*Pseudopodotenus*) G. Dellacasa, 1990c: 152

TYPE SPECIES: *Aphodius fulviventris* Fairmaire, 1860 (original designation).

DESCRIPTION. Rather large species (length 8-11 mm), nearly glabrous, sericeous, almost flat. Blackish with pale reddish abdomen. Head with epistome feebly gibbous, shiny, distinctly punctured; clypeus subtruncate anteriorly, rounded at sides, rather thickly

bordered, border feebly upturned, shortly and sparsely bristled; genae angulate, shortly and sparsely ciliate, more protruding than eyes; latter large; frontal suture distinctly impressed, not tuberculate. Pronotum moderately convex, narrowly flattened laterally, rounded at sides, before base distinctly foveolate; hind angles acute; base distinctly bisinuate and strongly bordered. Scutellum small, triangular, sparsely punctured. Elytra elongate, somewhat widened posteriorly, flattened on disc; preapical declivity distinctly gibbous; striae fine, superficially punctured; interstices flat, not punctured. Fore tibiae proximally feebly serrulate at outer margin; upper side nearly smooth. Middle and hind tibiae with feeble transverse carinae on outer face; apically fimbriate with elongate and irregularly unequal spinules. Tarsi very elongate. Pygidium with few, moderately elongate and straight setae; its apical margin rather elongately ciliate. Sexual dimorphism shown in males mainly by fore tibiae bidentate at outer margin. Aedeagus stout, with short paramera, moderately acuminate apically and distinctly sinuate dorsally. Epipharynx widely rounded at sides; at anterior margin with a double belt of strong protruding spines; epitorma slender, subconical; corypha with apical elongate spiculae distinctly protruding beyond front margin; chaetopodia densely pubescent; chaetopariae moderately elongate and densely arranged.

DISTRIBUTION. Neotropical region montane areas

Pseudopodotenus fulviventris (Fairmaire, 1860) **n. comb.** (figs 827, 829-831)

Aphodius fulviventris Fairmaire in Fairmaire & Germain, 1860: 268

Aphodius (*Podotenus*) *fulviventris*; A. Schmidt, 1913: 137

Aphodius (*Pseudopodotenus*) *fulviventris*; G. Dellacasa, 1990c: 153

TYPE LOCALITY: "Chili" [Chile].

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (lectotype male examined).

DESCRIPTION. Length 8-11 mm, elongate, nearly flat, rather glabrous. Head and pronotum shiny, elytra sericeous. Blackish; antennae piceous, club testaceous; tarsi reddish; abdomen pale red. Head wide, shiny; epistome feebly gibbous, distinctly punctured; clypeus anteriorly subtruncate, rounded at sides; genae obtusely angulate, shortly bristled, more protruding than eyes; frontal suture distinctly impressed, V-shaped, not tuberculate. Pronotum shiny, widely transverse, almost regularly and distinctly punctured, convex on disc, flattened near front and hind angles; sides widely rounded, distinctly bordered, shortly ciliate, foveolate before hind angles; latter acute; base strongly bisinuate and distinctly bordered. Scutellum elongate, punctured on basal half, more shiny than elytra. Elytra sericeous, oval, nearly flattened, posteriorly widened, with feeble humeral callus, distinctly gibbous preapically, sides and apex with short yellowish hairs; striae superficial, almost indistinctly punctured; interstices flat, smooth, first one subcarinate near scutellum and moderately convex on disc; epipleura strong, quite shortly ciliate; apical elytral angle widely rounded. Metasternal plate with distinct longitudinal groove. Middle and hind tarsi slender and elongate. Hind tibiae superior apical spur shorter than first tarsal segment; latter longer than following three combined. Male: fore tibiae relatively more elongate and slender, with two teeth at outer

margin; pronotum with feeble, smooth longitudinal groove. Female: fore tibiae relatively shorter and stout, with three teeth at outer margin; pronotum without trace of longitudinal groove.

DISTRIBUTION. Montane areas of central Chile.

Genus *PSEUDOTEUCHESTES* G. Dellacasa, 1986 **stat. nov.**

Aphodius (*Pseudoteuchestes*) G. Dellacasa, 1986: 193

TYPE SPECIES: *Aphodius schirparakensis* Petrovitz, 1955 (original designation).

DESCRIPTION. Medium size species (length 5-8 mm), convex, glabrous, dull or shiny. Blackish, elytra sometimes more or less broadly yellow-reddish apically or yellow with several small discal blackish spots. Head with epistome gibbous, irregularly punctured; clypeus sinuate at middle, rounded at sides, thickly bordered, border glabrous and feebly upturned; genae rounded, sparsely and elongately ciliate, more protruding than eyes; latter medium sized; frontal suture tuberculate, the median tubercle umbilicate at tip. Pronotum transverse, convex, with double irregular punctation; sides sinuate before the obtusely rounded hind angles; strongly bordered at base. Scutellum large, pentagonal, parallel-sided at the basal three fourths. Elytra moderately convex; striae broad, deep, crenulate; interstices convex, finely punctured. Fore tibiae distally tridentate and proximally faintly serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with short and equal spinules. Pygidium with fine, moderately elongate and almost straight setae; its apical margin rather densely ciliate. Sexual dimorphism shown in males by upper side nearly dull; by stronger frontal tubercles and by broader fore-tibial spur. Aedeagus with elongate paramera, curved and acuminate apically. Epipharynx rounded laterally, the front margin only laterally with vestiges of pubescent lobes; epitorma campaniform, narrowed frontward; corypha barely more protruding than front margin, with short, strong and dense apical spiculae; chaetopariae medium sized.

DISTRIBUTION. Palearctic region (Afghanistan).

Pseudoteuchestes schirparakensis (Petrovitz, 1955) **n. comb.** (figs 828, 832-834)

Aphodius (*Teuchestes*) *schirparakensis* Petrovitz, 1955: 277

Aphodius (*Pseudoteuchestes*) *schirparakensis*; G. Dellacasa, 1986: 193

TYPE LOCALITY: Schirparak, Koh-i-Baba [Afghanistan].

TYPE DEPOSITORY: Zoologisk Museum, Universitetets København. Copenhagen (type not examined).

DESCRIPTION. Length 5-8 mm oval-elongate, moderately convex, glabrous, male dull, female shiny. Blackish; elytra yellowish with juxtasutural interstice and several longitudinal discal spots blackish, or elytra blackish only at apex narrowly brown-reddish. Head with epistome gibbous, not very shiny, irregularly punctured, punctation sometimes confluent and subrugose; clypeus sinuate at middle, rounded at sides; genae obtusely rounded, more protruding than eyes; frontal suture with median tubercle more or less raised and distinctly umbilicate at tip, laterally with two weaker and transverse

tubercles. Pronotum convex, transverse, with double punctation, the irregularly sparse larger punctures mixed with much finer nearly imperceptible ones; sides bordered, distinctly sinuate before hind angles; latter obtusely rounded; base bisinuate and strongly bordered. Scutellum concave, parallel-sided in the basal three fourths; apically acuminate; finely and sparsely punctured. Elytra moderately convex, regularly rounded apically; striae broad, deep but shallowly punctured and feebly crenulate; interstices distinctly convex, very finely punctured. Hind tibiae superior apical spur barely shorter than first tarsal segment; latter as long as following three combined. Male: upper side dull; frontal suture with relatively stronger median tubercle; pronotum broader and less convex; fore tibiae apical spur shorter and stout. Female: upper side shiny; frontal suture with median tubercle weaker; pronotum barely narrowed toward front margin and relatively more convex; fore tibiae apical spur slender and acuminate.

DISTRIBUTION. Afghanistan.

Genus *PUBINUS* Mulsant & Rey, 1870

Aphodius (*Amidorus* groupe *Pubinus*) Mulsant & Rey, 1870b (1869): 489

Aphodius (*Pubinus*) Mulsant & Rey, 1871 (1870): 474; Reitter, 1892: 213 (as synonym of *Amidorus*); G. Dellacasa, 1983: 406

TYPE SPECIES: *Scarabaeus lutarius* Fabricius, 1792 (junior synonym of *Scarabaeus tomentosus* O. F. Müller, 1776) (monotypy).

DESCRIPTION. Medium size species (length 5-6.5 mm), oval-elongate, moderately convex, more or less dull and more or less diffusedly pubescent. Blackish, sometimes elytra reddish. Head with epistome nearly flat; clypeus anteriorly subtruncate, rounded at sides, thickly bordered, border glabrous; genae completely rounded, sparsely and elongately ciliate, not at all more protruding than eyes; latter medium sized; frontal suture not tuberculate. Pronotum densely punctured; sides thinly bordered; hind angles obtuse; basal border very thin. Scutellum small, triangular. Elytra with striae fine and crenulate; interstices more or less convex. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with elongate and irregularly unequal spinules. Pygidium with few straight discal setae; its apical margin rather sparsely and somewhat elongately ciliate. Sexual dimorphism shown by different wideness of superior pubescence: in males, pronotum is nearly glabrous, laterally and basally shortly pubescent only. Aedeagus with paramera abruptly curved apically, sickle-shaped. Epipharynx faintly sinuate at anterior margin; epitorma drop-shaped; corypha with protruding spiculae, central ones more elongate; pedia diffusedly pubescent, mixed elongate spines irregularly scattered; chaetopariae slender, elongate and densely arranged.

DISTRIBUTION. Palearctic region.

Pubinus tomentosus (O. F. Müller, 1776) **n. comb.** (figs 835-837, 838)

Scarabaeus tomentosus O. F. Müller, 1776: 55

Scarabaeus lutarius Fabricius, 1792: 35

Aphodius (Pubinus) lutarius; Mulsant & Rey, 1871 (1870): 474

Aphodius tomentosus; Harold, 1874: 191

Aphodius (Amidorus) tomentosus; Reitter, 1892: 218; W. Koshantschikov, 1911a: 24

Aphodius (Amidorus) tunicatus Reitter, 1894a: 188

Aphodius (Pubinus) tomentosus; G. Dellacasa, 1983: 406

TYPE LOCALITY: "Dania" [Denmark] (conventional).

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 5-6.5 mm, oblong-oval, feebly convex, rather dull, more or less diffusely pubescent. Blackish; elytra dark reddish, shadowy darker on disc. Head with epistome faintly gibbous, coarsely punctured; clypeus subtruncate anteriorly, rounded at sides; genae quite rounded, not at all more protruding than eyes; frontal suture distinctly impressed, not tuberculate. Pronotum densely and doubly punctured; sides thinly bordered; hind angles obtuse; base quite thinly bordered, faintly sparsely bristled. Scutellum acuminate and subcarinate apically, distinctly microreticulate, finely and densely punctured. Elytra moderately convex; striae fine, deep, distinctly punctured, crenulate; interstices with moderately coarse, rather irregular punctation, punctures with short yellowish hairs, more elongate and dense laterally and apically. Hind tibiae superior apical spur shorter than first tarsal segment; latter nearly as long as following three combined. Male superiorly shiny; pronotum nearly glabrous, on sides and toward hind angles shortly and sparsely pubescent, on disc relatively less densely punctured; elytral interstices more convex, less densely punctured, more shortly and sparsely pubescent; metasternal plate pubescent. Female superiorly dull; pronotum quite pubescent, relatively more densely punctured on disc; elytral interstices less convex, more densely punctured, more elongately and densely pubescent; metasternal plate glabrous.

DISTRIBUTION. Northern and Central Europe; Northern Asia, eastward to Siberia (Irkutsk).

Genus *QINGAPHODIUS* Král, 1997 **stat. nov.**

Aphodius (Qingaphodius) Král, 1997: 143

TYPE SPECIES: *Aphodius nikodymi* Král, 1997 (original designation).

DESCRIPTION. Medium size species (length 5.5-7.5 mm), oval-elongate, moderately convex, shiny, glabrous. Blackish or dark chestnut-brown. Head with epistome feebly convex, punctulate, with strong transverse and arcuate carina anteriorly; clypeus widely sinuate at middle, rounded at sides, thinly bordered, border upturned and quite bristled; genae obtusely rounded, ciliate, distinctly more protruding than eyes; latter rather small; frontal suture not at all tuberculate and indicated only by lateral vestiges. Pronotum transverse, moderately convex, doubly punctured; sides nearly straight, thickly bordered, border sparsely ciliate; hind angles broadly obtusely rounded; base thinly bordered, border faint at middle. Scutellum small, triangularly elongate with curved sides. Elytra moderately convex, somewhat widened posteriorly, not denticulate at shoulder, rather deeply striate; striae feebly crenulate; interstices flat, very finely and sparsely punctured. Fore tibiae distally sharply tridentate and proximally faintly

serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with elongate and irregularly unequal spinules. Pygidium with rather dense, elongate and recumbent pubescence; its apical margin finely and elongately ciliate at middle only. Sexual dimorphism shown in males by thickened middle tibiae with a ventromedial brush of dense spiculae; their inferior apical spur strongly shortened and distinctly inwardly bent apically; by middle femora with posteroventral brush of short spiculae, distinctly sinuate at proximal margin and angulate near base; by metasternal plate deeply concave. Aedeagus rather stout, paramera with remarkably developed apical membranous processes. Epipharynx feebly sinuate at fore margin, widely rounded at sides; torma campaniform; corypha with a tuft of strong apical spiculae frontwardly protruding; chaetopariae short, stout and moderately dense; pedia densely and rather shortly pubescent with mixed several short and stout spines rather densely arranged near chaetopariae; apophobae inwardly densely pubescent.

DISTRIBUTION. Eastern Palearctic region (China; province Qinghai).

BIONOMY. The collecting records of the two species at present pertaining to this genus [*Qingaphodius nikodymi* (Král, 1997) and *Qingaphodius ochotonarum* (Král, 1997)] respectively are from the burrows of the rodents *Marmota himalayana* (Hodgson, 1841) and *Ochotona* species.

Qingaphodius nikodymi (Král, 1997) **n. comb.** (figs 839, 842-844)

Aphodius (*Qingaphodius*) *nikodymi* Král, 1997: 144

TYPE LOCALITY: "China, Qinghai reg., 3500 m, 120 Km W of Qinghai Hu, Tianjun".

TYPE DEPOSITORY: David Král collection. Praha (holotype not examined).

DESCRIPTION. Length 6.5-7.5 mm, oval-elongate, moderately convex, shiny, glabrous. Dark chestnut-brown; clypeal margin and elytra somewhat paler; legs brown-reddish; antennal club piceous. Head with epistome feebly convex at centre, narrowly flat toward clypeal sides, anteriorly with strong, arcuate, transverse carina, from this rather abruptly recumbent toward clypeal margin; finely, sparsely and near regularly punctured; clypeus broadly sinuate at middle, rounded at sides; genae obtusely rounded, somewhat auriculate, rather elongately bristled, distinctly more protruding than eyes; frontal suture indicated only by short lateral vestiges; genal sutures distinct; front regularly convex, slightly more coarsely and densely punctured than epistome. Pronotum widely transverse, feebly convex, doubly punctured; smaller punctures of the same size of those on epistome, regularly scattered throughout; large punctures, five to six times larger than small punctures, coarse, faintly umbilicate and irregularly sparse; fore angles distinct and slightly protruding frontwardly; sides nearly straight, rather thickly bordered, border sparsely ciliate; hind angles broadly obtusely rounded; base feebly bisinuate, thinly bordered, border nearly faint at scutellum level. Scutellum somewhat depressed and punctured basally. Elytra feebly widened posteriorly, moderately convex; striae rather deep, feebly but distinctly crenulate; interstices flat, rather wide, very finely and sparsely punctured. Superior apical spur of hind tibiae

longer than first tarsal segment; latter as long as following two combined. Male: middle tibiae remarkably thickened, with a ventromedial brush of dense, stout and rather short spiculae, their inferior apical spur strongly shortened and distinctly inwardly bent apically; middle femora with posteroventral brush of dense, stout and short spiculae; middle and hind femora distinctly sinuate and angulate near base at proximal margin; metasternal plate strongly concave. Female: middle tibiae not thickened and without ventromedial brush of spiculae, their inferior apical spur stout but simply acuminate apically; middle femora without posteroventral brush of spiculae; middle and hind femora neither sinuate nor angulate at proximal margin; metasternal plate flat.

DISTRIBUTION. The species is so far known from type locality only.

REMARKS. Thanks due to the courtesy of Dr David Král (Praha), we had the opportunity to study two paratypes (male and female) of this taxon.

Genus *RENAUDIUS* Balthasar, 1951

Renaudius Balthasar, 1951: 153; M. Dellacasa, 1988a (1987): 295 (as synonym of *Oxyomus*)

TYPE SPECIES: *Heptaulacus tesari* Paulian, 1942 (original designation).

DESCRIPTION. Small size species (length 3-4 mm), oval-elongate, moderately convex, dull, nearly glabrous. Piceous, clypeal margin and front angles of pronotum reddish. Head rather large; epistome feebly gibbous, strongly microreticulate, rather finely punctured; clypeus sinuate at middle, rounded at sides, thinly bordered, border anteriorly feebly upturned, glabrous; genae obtusely rounded, ciliate, more protruding than eyes; latter medium sized; frontal suture finely impressed, not tuberculate. Pronotum without trace of grooves and foveolae, strongly microreticulate, rather superficially and regularly punctured, punctures carious; sides feebly rounded, subsinuate before hind angles; latter truncate and distinctly inward sinuate; base thickly bordered, border shortly but distinctly bristled. Scutellum small, triangularly elongate, convex, microreticulate, not punctured. Elytra rather elongate, oval, denticulate at shoulder; striae wide and deep, strongly microreticulate, with a median longitudinal row of large punctures strongly impressed; interstices costiform, shiny, toward apex with extremely short, nearly imperceptible hairs. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. Middle and hind tibiae with feeble transverse carinae on outer face; apically fimbriate with stout and irregularly unequal spinules. Pygidium with sparse, very short and recumbent pubescence; its apical margin with two cilia very elongate. Sexual dimorphism shown in males by fore tibiae relatively more slender and elongate; their apical spur short, downwardly bent and distinctly hooked apically. Aedeagus stout, feebly sclerotized; paramera acuminate and shortly pubescent apically. Epipharynx widely transverse; broadly rounded at sides; front margin faintly sinuate at middle; epitorma campaniform; corypha with four apical spiculae of which the median two elongate and strongly protruding beyond front margin; chaetopariae stout, rather elongate, moderately dense.

DISTRIBUTION. Eastern Palearctic and Oriental region.

Renaudius tesari (Paulian, 1942) (figs 840, 845-847)

Heptaulacus tesari Paulian, 1942: 60

Renaudius tesari; Balthasar, 1951: 153

Oxyomus tesari; M. Dellacasa, 1988a (1987): 298

TYPE LOCALITY: Chung King, Szechwan, China centr[a]lis.

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (lectotype female examined).

DESCRIPTION. Length 3-4 mm, oval-elongate, moderately convex, dull, nearly glabrous. Piceous, clypeal margin and front angles of pronotum reddish; antennal club testaceous; legs reddish. Head with epistome feebly gibbous, with few sparse superficial punctures nearly imperceptible among strong microreticulation; clypeus distinctly sinuate at middle, widely rounded at sides; genae obtusely rounded, distinctly more protruding than eyes; frontal suture finely impressed, not at all tuberculate. Pronotum transverse, convex, quite strongly microreticulate, with wide superficial subconfluent punctation; punctures carious; sides feebly rounded and subsinuate before hind angles; latter truncate and distinctly inward sinuate, base thickly bordered. Scutellum convex, feebly depressed at sides, strongly microreticulate, not punctured. Elytra regularly oval, distinctly denticulate at shoulder; striae very wide, strongly deep, distinctly microreticulate, at middle with longitudinal row of large punctures strongly impressed; interstices narrowly costiform, shiny at tip and with nearly imperceptible hairs toward apex. Superior apical spur of hind tibiae shorter than first tarsal segment; latter as long as following three combined. Male: fore tibiae relatively more slender and elongate, their apical spur rather short, downwardly bent and inward hooked apically. Female: fore tibiae relatively stouter and shorter, their apical spur straight and elongate.

DISTRIBUTION. Szechouan Province, Central China.

REMARKS. The **female lectotype herein designated** bears the following labels:

- 1) white, printed: Chung King, Szechuwan, China centr[is];
- 2) white, handwritten: *Heptaulacus Tesari* n. sp.;
- 3) red, printed: Type;
- 4) red, handwritten: *Heptaulacus tesari* Paulian, 1942, lectotype female, P. Bordat & G. Dellacasa des., 1997.

Genus *SIAMAPHODIUS* Masumoto, 1991 **stat. nov.**

Aphodius (*Siamaphodius*) Masumoto, 1991: 29

TYPE SPECIES: *Aphodius naafon* Masumoto, 1991 (original designation).

DESCRIPTION. Small size species (length 3.5-4.5 mm), moderately convex, rather stout, shiny, glabrous. Brown-blackish; head and pronotum more or less widely reddish. Head with epistome gibbous, punctured; clypeus feebly sinuate at middle, widely rounded at sides, finely bordered, border shortly bristled; genae obtusely rounded, shortly ciliate, more protruding than eyes; latter medium sized; frontal suture finely impressed, not tuberculate. Pronotum transverse, rather irregularly and doubly punctured; feebly rounded at sides; hind angles distinctly truncate; base thickly bordered. Scutellum small,

pentagonal with sides shortly parallel toward base, as wide as first two elytral interstices basally. Elytra oval, strongly denticulate at shoulder; punctato-striate; first stria as wide as second apically; interstices flat, punctulate. Fore tibiae distally tridentate and proximally finely serrulate at outer margin; upper side coarsely, densely and rather regularly punctured. Middle and hind tibiae with rather feeble transverse carinae on outer face; apically fimbriate with more or less short and equal spinules. Pygidium with some straight discal setae. Sexual dimorphism shown in males by metasternal plate relatively more deeply incavate and less densely punctured. Aedeagus with paramera stout and curved apically. Epipharynx transverse, sinuate at middle of front margin; epitorma widely conical; corypha with two strong apical spiculae; pedia pubescent with some stouter spines laterally mixed; chaetopariae rather stout and elongate; pterno- and dextiotormae short.

DISTRIBUTION. Oriental region.

Siamaphodius naafon (Masumoto, 1991) **n. comb.** (figs 841, 848-850)

Aphodius (*Siamaphodius*) *naafon* Masumoto, 1991: 30

TYPE LOCALITY: Doi Inthanon, Chiang Mai Prov., Northwest Thailand.

TYPE DEPOSITORY: National Science Museum (Natural History). Tokyo (holotype male not examined).

DESCRIPTION. Length 3.5-4.5 mm, moderately convex, rather stout, shiny, glabrous. Dark brown; clypeus, sides of pronotum, juxtasutural interstice and lateral margin of elytra more or less widely reddish. Head with epistome gibbous, simply, rather finely, densely and regularly punctured; punctation distally finer and sparser; clypeus feebly sinuate at middle, widely rounded at sides; genae obtusely rounded, distinctly more protruding than eyes; frontal suture very finely impressed, not at all tuberculate. Pronotum transverse, doubly punctured; smaller punctures nearly like those on head, somewhat finer only; large punctures twice to four times larger than small punctures, irregularly and more densely scattered on sides; latter feebly rounded, at basal half nearly parallel; hind angles subtruncate; base distinctly bordered. Scutellum sparsely punctured basally. Elytra rather shortly oval, superficially microreticulate, rather deeply striate; striae distinctly crenulate; interstices flat, finely and sparsely punctured. Fore tibiae apical spur slender and regularly acuminate toward apex in both sexes. Hind tibiae superior apical spur shorter than first tarsal segment; latter as long as following three combined. Male: metasternal plate relatively more deeply grooved and less densely punctured. Female: metasternal plate nearly flat and more densely punctured.

DISTRIBUTION. The species is known from type locality only.

REMARKS. We examined a couple (male and female) of paratypes of this taxon.

Genus *SIGORUS* Mulsant & Rey, 1870

Aphodius (*Amidorus* groupe *Sigorus*) Mulsant & Rey, 1870b (1869): 489; Bedel, 1911a: 76

Aphodius (*Sigorus*) Mulsant & Rey, 1871 (1870): 474; Reitter, 1892: 213 (as synonym of *Amidorus*); G. Dellacasa, 1983: 408

Sigorus; Ádám, 1994: 14

TYPE SPECIES: *Scarabaeus porcus* Fabricius, 1792 (monotypy).

DESCRIPTION. Rather small size species (length 4-6 mm), oblong, convex, moderately shiny, nearly glabrous. Blackish, elytra dark reddish or vinaceous. Head small, epistome gibbous, punctured; clypeus faintly sinuate at middle, rounded at sides, thinly bordered, border distinctly bristled; genae rounded, densely and elongately ciliate, not more protruding than eyes; latter medium sized; frontal suture tuberculate. Pronotum transverse, convex, coarsely, nearly regularly punctured; base bordered. Scutellum small, triangular, shiny, punctured basally. Elytra oval-elongate, rather shiny, shortly pubescent on sides and toward apex, widely and deeply striate; interstices sharply raised near lateral margins and with longitudinal ridges mixed with distinctly confluent punctation, apically with few, extremely short, yellowish hairs. Fore tibiae distally tridentate and proximally feebly serrulate at outer margin; upper side finely and sparsely punctured. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with elongate and irregularly unequal spinules. Pygidium rugosely and coarsely punctured, with fine, dense and recumbent pubescence, mixed elongate and straight discal setae; its apical margin sparsely and elongately ciliate. Sexual dimorphism shown in males mainly by frontal suture faintly tuberculate and shiny pronotum. Aedeagus with paramera membranous apically and tegmen angulately margined toward base. Epipharynx distinctly sinuate at front margin, widely rounded at sides; epitorma conical; corypha with stout spiculae, central ones strongly prominent; pedia pubescent near epitorma only and with few stout spines irregularly scattered; chaetopariae elongate, stout and densely arranged.

DISTRIBUTION. Palearctic region.

Sigorus porcus (Fabricius, 1792) (figs 851-853, 854)

Scarabaeus porcus Fabricius, 1792: 26

Aphodius porcus; Mulsant, 1842: 267

Aphodius (*Sigorus*) *porcus*; Mulsant & Rey, 1871 (1870): 474; Bedel, 1911a: 76; G. Dellacasa, 1983: 409

Aphodius (*Amidorus*) *porcus*; Reitter, 1892: 218; Landin, 1956a: 214 (lectotype designation)

Sigorus porcus; Ádám, 1994: 14

TYPE LOCALITY: "Halae Saxonum" [Germany].

TYPE DEPOSITORY: Zoological Museum. Kiel (type not examined).

DESCRIPTION. Length 4-6 mm, oblong, convex, rather shiny, nearly glabrous. Blackish, elytra vinaceous. Head small, epistome feebly gibbous, distinctly, coarsely, anteriorly subrugosely, punctured; clypeus faintly sinuate at middle, rounded at sides; genae rounded, not more protruding than eyes; frontal suture tuberculate. Pronotum rather convex, coarsely, densely and regularly punctured, sometimes with median longitudinal smooth line on disc; sides thinly bordered; hind angles obtusely rounded; base bordered. Scutellum shiny, sparsely and coarsely punctured basally. Elytra moderately convex, rather shiny, nearly glabrous, feebly widened and with few short yellowish hairs apically; striae wide and deep, superficially punctured; interstices flat with lateral margins sharply raised and with longitudinal irregular ridges mixed with coarse and

rather confluent punctures. Hind tibiae superior apical spur as long as first tarsal segment; latter as long as following two combined. Male: tubercles of frontal suture relatively weaker; fore tibiae apical spur short, plump at middle, downward curved. Female: tubercles of frontal suture distinct, central ones stronger; fore tibiae apical spur elongate, slender, nearly straight.

DISTRIBUTION. Central and Southern Europe, Asia Minor.

Genus *SIMOGONIUS* Harold, 1871

Simogonius Harold, 1871b: 22

Liparochirus Péringuey, 1901: 435 (Aphodiinae); A. Schmidt, 1911a: 49 (as synonym of *Simogonius*)

TYPE SPECIES: *Simogonius beccarii* Harold, 1871 (monotypy).

DESCRIPTION. Small size species (length 2.5-5 mm), convex, shiny, either glabrous or more or less diffusedly pubescent. Blackish, often clypeal margin and front angles of pronotum shadowy reddish. Head narrowed frontward; epistome feebly gibbous, rather densely punctured; clypeus either narrowly or not at all sinuate at middle, rounded at sides, quite bordered, border bristled; genae small, either obtuse or rounded, shortly ciliate, feebly more protruding than eyes; latter medium sized; frontal suture feebly impressed, not tuberculate. Pronotum slightly transverse, mostly widened at middle, doubly punctured; proximal half of lateral margins not visible from above; hind angles downward and inward folded; base bordered or not. Scutellum small, narrowly triangular. Elytra not denticulate at shoulder; striato-punctate; epipleura feebly downward folded simulating elytra with eleven striae and eleven interstices; latter convex or flat. Fore tibiae straightly truncate anteriorly, tridentate and proximally serrulate at outer margin; upper side coarsely, rather densely and regularly punctured. Middle and hind tibiae with two fine but distinct transverse carinae on outer face, apically fimbriate with spinules rather stout but progressively unequal. Hind tibiae superior apical spur shorter than inferior. Abdominal sternites not joined one another. Pygidium partially exposed, with few sparse discal and apical straight setae. Sexual dimorphism shown in males by outer claw of last segment of middle tarsi stout, angulately widened basally and distinctly longer than inner. Aedeagus with paramera curved apically. Epipharynx deeply sinuate at middle of anterior margin; latter with sparse strong and elongate setae; epitorma trapezoidal; corypha with two apical spiculae; pedia pubescent with few stout chaetae mixed; chaetopariae elongate; dexio- and pternotormae short.

DISTRIBUTION. Afrotropical region.

REMARKS. This genus-group taxon was till now always considered pertaining to the subfamily Eupariinae but thorough study of aedeagal and epipharyngeal features of its type species shows that it pertains to Aphodiinae. As a matter of fact, Péringuey (1901) creating the genus *Liparochirus* (junior synonym of *Simogonius* teste A. Schmidt, 1911) considered it pertaining to Aphodiinae, systematically close to *Drepanocanthus* and *Lorditomaus*, but this correct concept was never accepted by subsequent authors.

Simogonius beccarii Harold, 1871 (figs 855, 858-860)

Simogonius beccarii Harold, 1871b: 22

Liparochirus simplex Péringuey, 1901: 435; A. Schmidt, 1911a: 49 (as synonym of *Simogonius beccarii*)

TYPE LOCALITY: Keren [Ethiopia].

TYPE DEPOSITORY: Museo civico di Storia naturale "Giacomo Doria". Genoa (type examined).

DESCRIPTION. Length 4-5 mm, oval-subelongate, convex, shiny, more or less diffusedly pubescent. Blackish; clypeus, anterior angles of pronotum and sometimes elytra also, brown-reddish. Head with epistome moderately gibbous, simply, rather coarsely, regularly and densely punctured; punctation frontward and at middle somewhat finer and sparser; clypeus nearly semicircular, narrowly sinuate at middle; genae small, obtusely rounded, feebly more protruding than eyes; frontal suture finely impressed, not at all tuberculate. Pronotum feebly transverse; irregularly, rather coarsely and densely punctured; large punctures twice larger than small punctures, more dense on sides, there someone of them with elongate straight seta; sides, if viewed from above, elongately ciliate; lateral margins bordered; hind angles downward folded forming an inferior triangular unpunctured areola; base not bordered but quite shortly bristled. Scutellum impunctate, subcarinate at middle. Elytra oval, not denticulate at shoulder; striae wide, apically wider, strongly crenulate; interstices distinctly convex, at each side with a longitudinal row of rather strong punctures; laterally and, more or less preapically diffusedly, with long and rather curved setae; lateral interstices with only one longitudinal row of setigerous punctures; epipleural carina with elongately setigerous punctures. Fore tibiae apical spur short, stout and almost flattened. Hind tibiae superior apical spur distinctly shorter than first tarsal segment; latter as long as following three combined. Abdominal sternites coarsely and densely punctured, on sides with some sparse elongate setae but the apical sternite with a transverse belt of setigerous punctures. Distal half of pygidium exposed and as sculptured as abdominal sternites. Male: outer claw of middle tarsi, stout, angulately widened basally and distinctly larger than inner. Female: claws of middle tarsi normally shaped.

DISTRIBUTION. North-eastern and Central Africa (Ethiopia, Kenya, Zaire, Burundi, Malawi, Zimbabwe and Cameroon).

REMARKS. The synonymy of *Liparochirus simplex* Péringuey, 1901 versus *Simogonius beccarii* Harold, 1871 established by A. Schmidt (1911a) was confirmed by one of us (Bordat) through examination of type material of the former preserved in South African Museum, Cape Town.

Genus *SINAPHODIUS* Červenka, 1994 **stat. nov.**

Aphodius (*Sinaphodius*) Červenka, 1994: 111

TYPE SPECIES: *Aphodius yunnanus* Červenka, 1994 (original designation).

DESCRIPTION. Medium size species (length 5-6 mm), rather stout, convex, shiny or dull, more or less diffusedly pubescent. Dirty yellowish, head and pronotum more or less

widely reddish at sides. Head with epistome feebly gibbous, punctulate; clypeus not or faintly sinuate at middle, widely rounded at sides, bordered, border glabrous; genae obtusely angulate, shortly bristled, more protruding than eyes; latter medium sized; frontal suture impressed, not tuberculate. Pronotum strongly transverse, slightly broadened toward base, coarsely punctured; sides rounded, rather thickly bordered, border shortly and densely ciliate; hind angles truncate, inward sinuate; base distinctly bisinuate, not bordered. Scutellum small, triangular. Elytra rather stout, not denticulate at shoulder, truncate apically so pygidium partially exposed; punctato-striate, first stria as wide as second apically; interstices with setigerous punctation. Fore tibiae slightly curved, distally tridentate and proximally denticulate at outer margin; upper side sparsely, irregularly but rather coarsely punctured. Middle and hind tibiae with strong transverse carinae at outer face; apically fimbriate with alternately unequal spinules. Middle and hind tarsi longer than tibiae. Abdominal sternites with transverse belt of straight setae. Pygidium with few discal and many distal elongate setae. Sexual dimorphism shown in males by fore tibiae apical spur short, wide, inward hooked apically; metatibiae inferior apical spur reduced to a small tooth inflexed in an inferior apical foveola. Aedeagus slender; paramera rather elongate curved, acuminate and distinctly ciliate apically; in lateral view distinctly angulate before base. Epipharynx transverse, not sinuate at front margin; latter with strong and very elongate bristles; epitorma faint; corypha protruding beyond frontal margin; prophobae very finely and densely pubescent with an anterior row of rather elongate spiculae parallel to chaetopariae; latter short, not densely arranged.

DISTRIBUTION. Oriental region.

REMARKS. This recently created genus-group taxon results systematically close to *Brachiaphodius* but the species ascribed to it are easily distinguishable by their stout shape and by elytra truncate apically, leaving pygidium partially exposed.

Sinaphodius yunnanus (Červenka, 1994) **n. comb.** (figs 856, 861-863)

Aphodius (*Sinaphodius*) *yunnanus* Červenka, 1994: 112

TYPE LOCALITY: Jinghong, Yun-nan Prov., China.

TYPE DEPOSITORY: R. Červenka collection. Prague (holotype male not examined).

DESCRIPTION. Length 5-5.5 mm, stout, convex; moderately shiny, elytra apically sericeous. Head nearly semicircular; epistome feebly glabrous, anteriorly feebly flattened, simply punctured, punctation rather coarse and dense, regularly scattered throughout; lateral punctures setigerous, setae backward recumbent; clypeus not sinuate at middle, widely rounded at sides; genae obtusely angulate, more protruding than eyes; frontal suture nearly faint, not at all tuberculate. Pronotum widely transverse, strongly convex, simply, rather irregularly and coarsely punctured; punctures like those on head but somewhat stronger on disc, on sides twice larger and denser; sides and hind angles finely and densely ciliate; latter distinctly truncate and inward sinuate; base not bordered but shortly bristled. Scutellum at base somewhat larger than first two elytral interstices, with few superficial punctures on basal half. Elytra not denticulate at shoulder, finely striate; striae distinctly crenulate; interstices feebly convex with rather

dense setigerous punctures feebly rough on lateral interstices and toward apex; setae moderately elongate and backward curved; epipleura fringed by a row of setae like those on elytra. Hind tibiae superior apical spur nearly as long as first tarsal segment; latter longer than following three combined. Abdominal sternites and pygidium finely pubescent with many elongate setae mixed. Male: head relatively more wide; epistome more finely and sparsely punctured; fore tibiae apical spur inward curved apically; mesotibiae inferior apical spur reduced to a very short denticle. Female: head relatively less transverse; epistoma coarsely and densely punctured; fore tibiae apical spur and mesotibiae inferior apical spur normally shaped.

DISTRIBUTION. The species is known from type locality only.

REMARKS. We examined a couple (male and female) of paratypes of this species.

Genus *SINODIAPTERNA* G. Dellacasa, 1986 **stat. nov.**

Aphodius (*Sinodiapterna*) G. Dellacasa, 1986: 265

TYPE SPECIES: *Aphodius troitzkyi* Jacobson, 1896 (original designation)

DESCRIPTION. Small or medium size species (length 3-6 mm), strongly convex, shiny, glabrous. Black; clypeal border, antennal club and tarsi brownish. Head with epistome gibbous, anteriorly subcarinate, irregularly punctured; clypeus sinuate at middle, denticulate at sides, rather thinly bordered, border upturned at front lateral angles, glabrous; genae obtusely angulate, shortly ciliate; more protruding than eyes; latter medium sized; frontal suture cariniform, not tuberculate. Pronotum nearly squared; strongly convex, doubly punctured; base not bordered. Scutellum large, triangularly elongate, acuminate apically. Elytra regularly and strongly convex, at base slightly larger than pronotum; striae fine, deep, crenulate or not; interstices nearly flat, finely punctured. Fore tibiae truncate at front margin, distally tridentate and proximally not serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with short and equal spinules. Pygidium nearly glabrous, apically with few very elongate cilia at middle only. Sexual dimorphism very distinct shown in males by fore tibiae apical spur spatulate and apically inwardly curved. Aedeagus strongly sclerotized; paramera elongate, slender in dorsal view, lanceolate apically. Epipharynx strongly transverse, broadly rounded at sides; epitorma barely conical; corypha much more protruding than front margin and with three pairs of short stout lateral spiculae; chaetopariae moderately dense but rather strong.

DISTRIBUTION. Eastern Palearctic region.

Sinodiapterna troitzkyi (Jacobson, 1897) **n. comb.** (figs 857, 864-866)

Aphodius (*Teuchestes*) *troitzkyi* Jacobson, 1897: 87

Aphodius (*Diapterna*) *troitzkyi*; Savtschenko, 1938: 243

Aphodius (*Sinodiapterna*) *troitzkyi*; G. Dellacasa, 1986: 265

TYPE LOCALITY: Minussinsk [Russia].

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 4-6 mm, short, subsquare, strongly convex, very shiny, glabrous.

Black, clypeal margin, antennal club and tarsi brownish. Head with epistome gibbous, irregularly and rather coarsely punctured, finely microreticulate, moderately shiny, with curved, short but distinct carina; clypeus feebly and broadly sinuate at middle, distinctly denticulate at sides, almost imperceptibly bordered but border distinctly upturned; genae obtusely angulate, more protruding than eyes; frontal suture strongly cariniform, upturned at middle. Pronotum nearly as wide as long, strongly convex and very shiny, with double punctation, the larger, irregular and rather sparse punctures mixed with many small ones; sides finely bordered, sinuate before hind angles; latter truncate; base with a belt of coarse punctures and with lateral strong segments of border. Scutellum flat, elongate, sinuate at sides, acuminate apically, with double, irregular and sparse punctation. Elytra shining, strongly convex, widely rounded; striae fine, rather deep, distinctly crenulate; interstices feebly convex with extremely fine punctation. Fore tibiae truncate at front margin. Hind tibiae superior apical spur longer than first tarsal segment; latter nearly as long as the following three combined. Male: fore tibiae apical spur spatulate, apically curved inward and downward; hind tibiae relatively broader and shorter. Female: fore tibiae apical spur short, stout, subconical, barely rounded apically; hind tibiae relatively slender.

DISTRIBUTION. Siberia, Manchuria, China, Korea, Taiwan, Japan.

Genus *SITIPHUS* Fairmaire, 1894

Sitiphus Fairmaire, 1894: 313

Aphodius (*Mendidius* Sectionsname *Sitiphus*); Reitter, 1894b: 253

Aphodius (*Sitiphus*); d'Orbigny, 1896a: 222; G. Dellacasa, 1992a: 122

TYPE SPECIES: *Sitiphus brisouti* Fairmaire, 1894 (junior synonym of *Aphodius brevitarsis* Reitter, 1894) (monotypy).

DESCRIPTION. Small or medium size species (length 3-6 mm), apterous or winged, convex, shiny, rather glabrous. Testaceous; sometimes head, pronotum, scutellum and elytral suture darker. Head with epistome gibbous, coarsely and more or less strongly rugose; clypeus distinctly sinuate at middle, rounded or denticulate at sides, thinly bordered, border frontwardly thicker and upturned, bristled; genae rounded, ciliate, sometimes auriculate, more protruding than eyes; latter medium sized; frontal suture distinctly raised. Pronotum transverse, regularly punctured, ciliate at sides; base bordered. Scutellum small, triangularly elongate. Elytra more or less widened posteriorly; striae fine, distinctly punctate, feebly crenulate; interstices nearly flat, irregularly and sparsely punctured. Fore tibiae distally tridentate but proximally not serrulate at outer margin; upper side faintly punctured. Hind femora, oval and strongly compressed. Middle and hind tibiae strongly plump toward apex; their apical spurs stout; with rather strong transverse carinae on outer face; apically fimbriate with spinules extremely short and of equal length. Tarsi very short; claws slender, corneous. Pygidium rather sparsely and elongately ciliate. Sexual dimorphism shown in males by more sparse punctation on pronotal disc and by elytra nearly parallel-sided. Aedeagus short and stout, feebly sclerotized; paramera membranous, widened and rounded apically. Epipharynx feebly sinuate at anterior margin, moderately rounded at sides;

epitorma drop-shaped; corypha distinctly protruding beyond front margin and with several short apical spiculae; pedia sparsely pubescent, with few stout spines mixed; chaetopariae moderately elongate and densely arranged.

DISTRIBUTION. Southern Palearctic region.

REMARKS. Two of the three, probably saprophagous, species from Algeria and Tunisia deserts are, rather arbitrarily, hitherto ascribed to this genus-group taxon.

Sitiphus brevitarsis (Reitter, 1894) **n. comb.** (figs 867, 871-873)

Aphodius (*Mendidius*) *brevitarsis* Reitter, 1894a: 186

Sitiphus brisouti Fairmaire, 1894: 313

Aphodius (*Sitiphus*) *brisouti*; d'Orbigny, 1896a: 222

Aphodius (*Sitiphus*) *brevitarsis*; G. Dellacasa, 1992a: 123

TYPE LOCALITY: Algier [Algeria].

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 3-4.5 mm, oval, strongly convex, shiny, glabrous. Testaceous; head, pronotum, scutellum and elytral suture darker. Head with epistome gibbous, moderately but densely rugose; clypeus sinuate at middle, rounded at sides; genae auriculate, strongly more protruding than eyes; frontal suture distinctly raised. Pronotum transverse, strongly convex, narrowed anteriorly and somewhat depressed near front angles; more or less densely and regularly punctured; sides elongately ciliate; hind angles obtusely truncate; base distinctly bordered. Scutellum elongate, curved at sides, sparsely punctured near base and somewhat depressed apically. Elytra strongly convex, more or less widened backward; striae fine, distinctly punctured, subcrenulate; interstices nearly flat, sparsely and finely punctured. Hind tibiae superior apical spur stout, as long as inferior one and slightly longer than first tarsal segment; latter as long as following two combined. Male: genae relatively more distinctly auriculate; pronotum more transverse and more narrowed anteriorly, more distinctly depressed near front angles, punctation more regular and more sparse on disc; elytra nearly parallel-sided. Female: genae relatively less distinctly auriculate; pronotum less transverse, not narrowed anteriorly and not at all depressed near front angles; punctation more irregular and more dense on disc; elytra widened posteriorly.

DISTRIBUTION. Southern Algeria and Tunisia deserts.

Genus *STENOTOTHORAX* A. Schmidt, 1913 **stat. nov.**

Aphodius (*Stenotothorax*) A. Schmidt, 1913: 122; M. Dellacasa, 1988a (1987): 350; G. Dellacasa & Gordon, 1994: 168

Aphodius (*Stenothorax*) A. Schmidt, 1913: 204 (incorrect spelling for *Stenotothorax*)

Aphodius (*Stenobronchus*) A. Schmidt, 1916: 99 (*nomen novum innecessum*); Balthasar, 1964: 46

TYPE SPECIES: *Aphodius oblongus* Say, 1823 (subsequent designation: Balthasar, 1964).

DESCRIPTION. Small or medium size species (length 4-9 mm), oval-elongate, convex, shiny, glabrous or nearly glabrous. Blackish or piceous. Head wide; epistome gibbous, more or less coarsely or rugosely punctured; clypeus sinuate at middle, denticulate,

angulate or rounded at sides, thickly bordered, border glabrous; genae obtuse, shortly and sparsely ciliate, distinctly more protruding than eyes; latter medium sized; frontal suture distinctly impressed, not tuberculate. Pronotum widely transverse, moderately convex, distinctly narrowed posteriorly, usually doubly and coarsely punctured; sides thickly bordered, abruptly sinuate before hind angles; latter truncate and inward sinuate; base distinctly bordered. Scutellum small or very small, triangular. Elytra oblong, convex, more or less widened backward; shoulder denticulate; striae deep, not or feebly crenulate; interstices feebly convex, punctured, sometimes shortly and sparsely pubescent apically. Fore tibiae with outer distal teeth usually rather small and arranged at apical third; proximally serrulate at outer margin toward base only; upper side with a row of large and coarse punctures near inner margin. Middle tibiae inferior apical spur distinctly shorter than superior one. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with short and equal spinules. Pygidium with fine, dense and rather elongate recumbent pubescence; its apical margin densely and somewhat elongately ciliate. Sexual dimorphism shown in males mainly by fore tibiae apical spur hooked apically. Aedeagus feebly convex, wide; paramera slender, elongate, more or less strongly curved and acuminate apically. Epipharynx transverse, feebly sinuate at front margin, rather widely rounded at sides; epitorma conical; corypha with several strong apical spiculae protruding beyond front margin; pedia pubescent near epitorma only and with several short spines irregularly sparse; chaetopariae rather short, densely arranged.

DISTRIBUTION. Nearctic and Oriental region.

Stenothorax oblongus (Say, 1823) **n. comb.** (figs 868, 874-876)

Aphodius oblongus Say, 1823: 215; Horn, 1887: 61

Aphodius badipes Melsheimer, 1844: 135

Aphodius (*Stenothorax*) *oblongus*; A. Schmidt, 1913: 122

Aphodius (*Stenothorax*) *badipes*; G. Dellacasa & Gordon, 1994: 168

TYPE LOCALITY: Pennsylvania [U. S. A.] (restricted).

TYPE DEPOSITORY: unknown to authors; type probably lost.

DESCRIPTION. Length 7-9 mm, oval-elongate, shiny, moderately convex, nearly glabrous. Piceous-black; legs brown-reddish; antennae reddish with piceous club. Head with epistome moderately gibbous, depressed anteriorly at middle, sparsely and rather finely punctured, punctation distally more dense and coarse; clypeus broadly and moderately sinuate at middle, with a small, acute and reflexed tooth at each side, latter strongly arcuate; genae obtuse, distinctly more protruding than eyes; frontal suture V-shaped, distinctly impressed, not at all tuberculate. Pronotum widely transverse, distinctly narrowed posteriorly, moderately convex, doubly punctured, punctation more coarse near sides; latter rounded, bordered, abruptly sinuate before hind angles; latter obtusely truncate; base bisinuate and thickly bordered. Scutellum elongate, barely convex, shiny, sparsely and superficially punctured near base. Elytra oblong, convex, distinctly widened posteriorly; shoulder strongly denticulate; striae deep, subcrenulate; interstices feebly convex, sparsely and finely punctured, near apex shortly pubescent. Fore tibiae outer teeth rather small and arranged at apical third. Middle tibiae inferior apical spur as long

as half of superior one; latter slightly curved. Hind tibiae superior apical spur shorter than first tarsal segment; latter longer than following three combined. Male: fore tibiae apical spur short, truncate and slightly sinuate apically, inwardly hooked; pronotum relatively more transverse, less convex and more sparsely punctured on disc. Female: fore tibiae apical spur regularly acuminate apically; pronotum moderately narrowed frontward, more convex and more densely punctured on disc.

DISTRIBUTION. Southern Canada, southward up to South Carolina; westward up to Minnesota, Kansas and Arkansas.

REMARKS. The oldest name of this taxon, *Aphodius oblongus* Say, 1823, resulted secondary homonym of *Scarabaeus oblongus* Scopoli, 1763 (junior synonym of *Scarabaeus rufipes* Linné, 1758). The senior synonym *Aphodius badipes* Melsheimer, 1844 was considered its valid name.

The secondary homonymy of involved species-group taxa names does not more exist since evaluation of *Stenotothorax* at generic level, thus Say's name *Aphodius oblongus* has to be restored.

Genus *SUBRINUS* Mulsant & Rey, 1870

Aphodius (*Anomius* groupe *Subrinus*) Mulsant & Rey, 1870b (1869): 511

Aphodius (*Subrinus*); Mulsant & Rey, 1871 (1870): 474; Reitter, 1892: 201 (as synonym of *Nialus*); G. Dellacasa, 1983: 410

Subrinus; Ádám, 1994: 14

TYPE SPECIES: *Aphodius illigeri* Harold in Mulsant & Rey, 1869 (apocryphal taxon, junior synonym of *Aphodius rufus* Sturm, 1805, secondary homonym of *Scarabaeus rufus* Moll, 1782; valid name *Aphodius sturmi* Harold, 1870, *nomen novum conservandum*) (monotypy).

DESCRIPTION. Small size species (length 3-4 mm), elongate, cylindrical, shiny, glabrous. Brown-reddish or testaceous. Head with epistome gibbous, punctured; clypeus feebly sinuate at middle, rounded at sides, distinctly bordered, border glabrous; genae rounded, sparsely ciliate, not more protruding than eyes; latter medium sized; frontal suture distinctly impressed, median tubercle more or less distinct. Pronotum transverse, convex, doubly punctured; base not bordered. Scutellum small, pentagonal, sparsely punctured. Elytra usually parallel-sided, striae fine, punctured; interstices flat or feebly convex, punctured. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side sparsely and coarsely punctured. Middle and hind tibiae with rather strong transverse carinae on outer face; apically fimbriate with spinules stout and progressively unequal. Pygidium sparsely punctured, with some straight elongate discal setae; its apical margin finely, sparsely and very elongately ciliate. Sexual dimorphism shown in males by more distinct tubercles of frontal suture and by less dense punctation of pronotum disc. Aedeagus very small; paramera short, apically acuminate. Epipharynx broadly transverse, feebly sinuate at front margin, rounded at sides; epitorma conical; corypha with apical spiculae more or less distinctly protruding; pedia densely pubescent with few stout spines sparsely mixed; chaetopariae short and densely arranged.

DISTRIBUTION. Palearctic and Afrotropical region.

Subrinus sturmi (Harold, 1870) (figs 869, 877-879)*Aphodius rufus* Sturm, 1805: 144*Aphodius* (*Subrinus*) *illigeri* Harold in Mulsant & Rey, 1870b (1869): 511 (apocryphal taxon)*Aphodius sturmi* Harold, 1870: 106 (*nomen novum conservandum*)*Aphodius illigeri*; Harold, 1873: 121*Aphodius* (*Nialus*) *sturmi*; Reitter, 1892: 203*Aphodius* (*Subrinus*) *sturmi*; G. Dellacasa, 1983: 411*Subrinus rufus*; Ádám, 1994: 14

TYPE LOCALITY: Wien [Austria].

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 3-4 mm, cylindrical, moderately convex, shiny, glabrous. Ferruginous, head posteriorly piceous; sometimes head and pronotum piceous-reddish. Head with epistome gibbous, coarsely densely and regularly punctured; clypeus subtruncate apically, rounded at sides; genae rounded, subauriculate, not more protruding than eyes; frontal suture distinctly impressed, not tuberculate. Pronotum feebly convex, densely and doubly punctured; sides thinly bordered; base not bordered. Scutellum sparsely punctured basally. Elytra parallel-sided; striae fine, feebly crenulate; interstices barely convex, apically nearly dull, rather densely, very finely punctured, punctation more dense and coarse apically. Hind tibiae superior apical spur distinctly shorter than first tarsal segment; latter as long as following three combined. Male: frontal suture faintly raised at middle; pronotum relatively more finely and sparsely punctured on disc. Female: frontal suture only distinctly impressed; pronotum more coarsely and densely punctured on disc.

DISTRIBUTION. Southern Palearctic region.

REMARKS. Because nearly always overlooked, it might be interesting to report what Harold (1873: 121) wrote about this taxon whose description was attributed to him by Mulsant & Rey (1870: 511): “*Aphodius illigeri* Harold. Col. (Scarab.) p. 1029 - Ich habe nie einen *Aphodius* mit diesem Namen belegt und das allegirte Citat ist apocryph, es soll *A. Sturmi* Harold. Col. Hefte. VI. p. 106 heissen”.

Genus *SUGRAMES* Reitter, 1894*Sugrames* Reitter, 1894a: 184; A. Schmidt in Wytsman, 1910b: 15*Aphodius* (*Sugrames*); d'Orbigny, 1896a: 262; G. Dellacasa, 1992a: 124*Sugrames* (*Pseudosugrames*) Kieseritzky, 1928: 113 (**n. syn.**)TYPE SPECIES: *Sugrames hauseri* Reitter, 1894 (monotypy).

DESCRIPTION. Small size species (length 3.5-4 mm), strongly convex, shiny. Blackish or brownish, elytra sometimes yellowish with darker suture. Head with epistome gibbous, granulate, elongately and densely pubescent; clypeus sinuate at middle, denticulate at sides, thinly bordered, border all round shortly bristled; genae auriculate, shortly ciliate, more protruding than eyes; latter rather large; frontal suture faint with a sharp raised tubercle at middle. Pronotum strongly transverse, finely punctured, rounded and ciliate at sides; front margin with a thick membrane simulating a plump border; base quite bordered. Scutellum small, triangularly elongate, finely punctured. Elytra strongly

convex, short, oval; striae fine, punctured; interstices nearly flat, punctured. Fore tibiae with three strongly acuminate distal teeth but proximally not serrulate at outer margin; upper side rather sparsely but coarsely punctured. Middle and hind tibiae short, strongly widened apically, with two strong transverse carinae on outer face; their apical spurs moderately stout; apically fimbriate with spinules short and equal. Tarsal segments more and more shortened from first to fifth. Claws setigerous. Pygidium with few, sparse and elongate discal setae. Sexual dimorphism shown in males by median tubercle of frontal suture relatively more raised and more sharp; by pronotum with feeble impression at middle of front margin; by middle tibiae superior apical spur strongly curved. Aedeagus slender, with elongate paramera rounded apically. Epipharynx transverse, feebly sinuate at front margin, widely rounded at sides; epitorma very wide; corypha protruding beyond front margin and with two stout short apical spiculae; pedia glabrous with few and sparse stout spines only; chaetopariae rather elongate and few densely arranged.

DISTRIBUTION. South-central Palearctic region (Central Asia).

REMARKS. Corneous claws is the sole character for distinguishing *Pseudosugrames* from *Sugrames* that instead have setiform claws.

We had the opportunity to examine one male specimen of *Pseudosugrames johni* Kieseritzky, but, though its claws result somewhat stouter than those, e. g., of *Sugrames hauseri* Reitter, they are not at all corneous. Other features (epipharynx, aedeagus, etc.) nicely fit with those of *Sugrames* s. str. taxa, thus we herein consider *Pseudosugrames* junior synonym of the former.

Sugrames hauseri Reitter, 1894 (figs 870, 884-886)

Sugrames hauseri Reitter, 1894a: 185; A. Schmidt in Wytsman, 1910b: 15

Aphodius (*Sugrames*) *hauseri*; d'Orbigny, 1896a: 263; G. Dellacasa, 1992a: 126

TYPE LOCALITY: "Sefir-kuh; in Gebirge nordlich von Herat" [Afghanistan].

TYPE DEPOSITORY: Magyar Természettudományi Múzeum. Budapest. (holotype male examined).

DESCRIPTION. Length about 3.5 mm, strongly convex, shiny. Reddish, head and pronotum disc darker; scutellum brownish; elytra yellowish with brownish suture. Head with epistome strongly gibbous, granulate, with dense, elongate, blackish hairs; clypeus sinuate at middle, denticulate at sides; genae ovally auriculate, strongly more protruding than eyes; frontal suture nearly faint but with central tubercle strongly acuminate; lateral ones transverse; front nearly smooth. Pronotum strongly transverse, sparsely and finely punctured; rounded and elongately ciliate at sides; front margin with thick membrane simulating plump border; base bordered. Scutellum faintly punctured on basal half. Elytra stout, oval, strongly convex; striae fine, superficially punctured, not crenulate; interstices nearly flat with one more or less regular row of fine punctures at middle. Hind tibiae with superior apical spur stout, obliquely truncate apically, shorter than inferior one and as long as first segment of tarsi; latter as long as following three combined. Male: central tubercle of frontal suture relatively more sharp and strong; pronotum more transverse, more shiny, more superficially and more sparsely punctured on disc, feebly

but distinctly impressed at middle of anterior margin; scutellum strongly microreticulate and apically widely smooth at middle. Female: central tubercle of frontal suture relatively stouter and weaker; pronotum narrowed frontward, without impression at middle of anterior margin, less shine, more densely punctured on disc.

DISTRIBUTION. Afghanistan, Turkmenistan.

Genus *SUSSORCA* Paulian, 1954 **stat. nov.**

Acrossus (*Sussorca*) Paulian, 1954: 55

Aphodius (Artengruppe *Sussorca*); Endrödi, 1964a: 192

Aphodius (*Sussorca*); M. Dellacasa, 1988a (1987): 397

TYPE SPECIES: *Acrossus lusingae* Paulian, 1954 (original designation).

DESCRIPTION. Medium size species (length 8-9 mm), oval, moderately convex, sericeous; sides of pronotum and elytral odd interstices with pubescence nearly imperceptible. Dark orange; median spot on head, elytra and tip of fore tibiae outer distal teeth blackish. Head broad; epistome gibbous, punctulate; clypeus feebly and broadly sinuate at middle, widely rounded at sides, not bordered but quite very shortly bristled; genae acutely angulate, elongately ciliate, strongly more protruding than eyes; latter medium sized; frontal suture finely impressed, not tuberculate. Pronotum widely transverse, feebly convex, regularly and finely punctured; lateral margins thickly bordered; hind angles truncate; base finely bordered, strongly bisinuate. Scutellum small, narrowly triangular. Elytra oval, not denticulate at shoulder; striae unpunctured, finely bordered and not joined among them at apex; there, first one as wide as second; even interstices flat, odd feebly convex. Fore tibiae distally tridentate and proximally not serrulate at outer margin; upper side finely and sparsely punctured. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with spinules elongate and alternately unequal. Hind tarsi longer than tibiae. Pygidium with elongate apical setae. Sexual dimorphism shown in males by pronotum not narrowed frontward and relatively less convex. Aedeagus with rather elongate and apically acuminate paramera. Epipharynx with front margin straight; epitorma drop-shaped, distinctly marginate; corypha with six apical spiculae; chaetopariae rather slender and elongate; pariae densely pubescent with few stout spines subserially mixed.

DISTRIBUTION. Afrotropical region (Zaire).

Sussorca lusingae (Paulian, 1954) **n. comb.** (figs 880, 887-889)

Acrossus (*Sussorca*) *lusingae* Paulian, 1954: 55

Aphodius (Artengruppe *Sussorca*) *lusingae*; Endrödi, 1964a: 192

Aphodius (*Sussorca*) *lusingae*; M. Dellacasa, 1988a (1987): 397

TYPE LOCALITY: Lusinga (m 1760), P. N. Upemba, Congo Belge [Zaire].

TYPE DEPOSITORY: Musée Royal de l'Afrique Centrale. Tervuren (holotype female examined).

DESCRIPTION. Length 8-9 mm, oval, moderately convex, quite finely microreticulate so

sericeous; sides of pronotum and odd elytral interstices nearly imperceptibly pubescent. Dark orange; median spot on head, elytra and tip of outer distal teeth of protibiae blackish. Head wide; epistome gibbous, superficially microreticulate, very finely, nearly regularly, simply and rather densely punctured; clypeus feebly sinuate at middle, broadly rounded and slightly upturned at sides; genae acutely angulate but distal angle somewhat rounded at tip, elongately ciliate, strongly more protruding than eyes; frontal suture very finely impressed, not at all tuberculate. Pronotum broadly transverse, feebly convex, simply, very finely and regularly punctured; sides rounded, thickly bordered, some sparse and elongate proepisternal setae are visible from above; hind angles obliquely truncate, not inwardly sinuate; base deeply bisinuate, nearly bilobate laterally, not bordered. Scutellum finely punctured on basal half; at base somewhat larger than first elytral interstice only. Elytra oval, rather convex, widely and deeply striate; striae unpunctured; juxtasutural interstice distinctly convex apically; even interstices flat, very finely, and densely, rather confusedly punctured; odd interstices more densely punctured than even, feebly convex on disc, more distinctly convex toward apex. Fore tibiae apical spur nearly as long as first two tarsal segments combined. Hind tibiae superior apical spur somewhat shorter than first tarsal segment; latter slightly longer than following two combined. Male: pronotum relatively more widely transverse, not narrowed frontward and less convex. Female: pronotum relatively less transverse, narrowed frontward and more convex.

DISTRIBUTION. The species is known by typical series and from type locality only.

Genus *SYBAX* Boheman, 1857

Sybox Boheman, 1857: 365; Paulian, 1942: 101

Hypoplatys Harold, 1859: 221; Kraatz, 1859: 220 (footnote) (as synonym of *Sybox*)

TYPE SPECIES: *Sybox sulcicollis* Boheman, 1857 (subsequent designation: Paulian, 1942)

DESCRIPTION. Medium size or rather large species (length 6-11 mm), oblong, feebly convex, nearly glabrous. Upper side of fresh specimens with yellowish argillaceous coat; antennae testaceous; legs reddish. Head declinate; epistome backward gibbous, strongly sunk anteriorly, finely punctured; clypeus sinuate at middle, densely ciliate and obtusely angulate or rounded at sides; genae obtusely rounded, elongately and densely ciliate, more protruding than eyes; latter medium sized and nearly quite covered by anterior margin of pronotum; frontal suture raised, feebly tuberculate; front strongly depressed. Pronotum transverse, with a more or less wide median longitudinal groove and obliquely, widely foveolate on sides; latter broadly explanate and densely ciliate; base bisinuate, not bordered. Scutellum small, narrowly triangular, nearly subparallel-sided at basal half. Elytra with less than ten striae; latter nearly faint; odd interstices more or less strongly costiform; epipleura broad, reaching apical sutural angle; latter subacuminate. Fore tibiae with apical spur, widened into blade at inner margin; upper side rather finely and sparsely punctured. Middle and hind tibiae with distinct transverse carinae on outer face; apically fimbriate with spinules alternately unequal. Abdominal sternites depressed, not joined each other. Pygidium pubescent. Prosternal process strong, densely pubescent apically. Sexual dimorphism shown in males by mesotibiae inferior apical spur distinctly larger, falciform and apically inward hooked. Aedeagus

with paramera outward widened apically. Epipharynx strongly transverse; anterior margin sinuate at each side; epitorma broadened toward base; corypha protruding beyond front margin and with six large apical spiculae; pedia rather elongately pubescent with some stout spines antero-laterally mixed.

DISTRIBUTION. Afrotropical region.

REMARKS. Taxa pertaining to this genus are easily identifiable by their particular argillaceous coat.

Sybox sulcicollis Boheman, 1857 (figs 881, 890-892)

Sybox sulcicollis Boheman, 1857: 366

TYPE LOCALITY: "Caffraria" [South Africa].

TYPE DEPOSITORY: Naturhistoriska Riksmuseet. Stockholm (type male examined).

DESCRIPTION. Length 7.5-11 mm, oblong, moderately convex, quite dull, nearly glabrous. Yellowish; scutellum, fore tibiae (excepted brown-reddish inner widened process), last segments of tarsi and apical spur of tibiae dark brownish. Head with epistome distinctly gibbous at tip, anteriorly foveolate, throughout very finely and sparsely punctured, distally punctation sparser; clypeus deeply sinuate at middle, obtusely rounded and densely ciliate at sides; genae nearly rectangulate, but angle apically rounded, densely ciliate, strongly more protruding than eyes; frontal suture distinct, trituberculate. Pronotum broadly transverse, simply, irregularly, very sparsely punctured; front margin with transverse belt of small punctures; with a deep wide median longitudinal groove, each side with strongly raised and rather large carinae; latter outward contouring two small anterior foveolae; moreover there is an oblique median impression placed at disc lateral margin and other two deeper, one near front angles and another before hind angles; latter two densely pubescent; lateral margins nearly faintly bordered covered by dense pubescence; before base there is a transverse, distinctly pubescent groove; hind angles rounded, shortly ciliate; base not bordered, shortly bristled. Scutellum smooth. Elytra faintly striate; striae barely perceptible by a longitudinal row of very small punctures at each side of elytral costae representing odd interstices; first, third and ninth interstices strongly costiform up to apex; fifth shortened, reaching preapical declivity only; seventh very short, less raised than other, reduced to a humeral rudiment only; costae of first and seventh interstices densely pubescent apically; epipleural margin sparsely ciliate. Fore tibiae with the two distal outer teeth joined. Middle and hind tibiae sinuate at inner margin; latter quite rather elongately and densely ciliate. Middle and hind tarsal segments distinctly stouter than those of fore tarsi. Hind tibiae superior apical spur as long as first tarsal segment; latter as long as following two combined. Male: fore tibiae distally tridentate at outer margin; pronotal foveolae relatively more coarsely punctured; middle tibiae inferior apical spur distinctly larger, falciform and apically inward hooked. Female: fore tibiae distally bidentate at outer margin; pronotal foveolae relatively more superficially punctured; middle tibiae inferior apical spur normally shaped.

DISTRIBUTION. Eastern and Central Africa [Kenya (Tsavo N. P.), Tanganyika, Malawi, Zimbabwe].

Genus *SYMPHODON* A. Schmidt, 1913 **stat. nov.**

Aphodius (*Symphodon*) A. Schmidt, 1913: 128; G. Dellacasa, 1990c: 154

TYPE SPECIES: *Aphodius anomalus* Harold, 1874 (monotypy).

DESCRIPTION. Medium size species (length 6-8 mm); strongly elongate, moderately convex, feebly shiny, sparsely and shortly pubescent. Dirty testaceous. Head with epistome feebly gibbous, punctured; clypeus semicircular, distinctly bordered, border upturned and quite rather sparsely ciliate; genae obtusely angulate, elongately ciliate, more protruding than eyes; latter rather large; frontal suture distinctly impressed, not tuberculate. Pronotum remarkably short, punctured, with feeble longitudinal median groove on disc; sides rounded, before base distinctly excavate; hind angles sinuate; base not bordered. Scutellum small, triangularly oval, feebly concave, punctured on basal half. Elytra strongly elongate, three times longer than pronotum; striae finely punctured; even interstices flat, odd ones distinctly convex. Fore tibiae, at least in female, very short, widened apically, with the two distal outer teeth inferiorly joined; proximally serrulate at outer margin; upper side finely, irregularly and sparsely punctured. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with spinules elongate and irregularly unequal. Pygidium with fine, sparse and rather elongate apical cilia. Epipharynx stout, widened frontward at middle; corypha chalice-shaped with many strong spiculae protruding beyond front margin, latter with a belt of very elongate and sparse setae; chaetopodia densely and finely pubescent; chaetopariae short and dense. Males unknown.

DISTRIBUTION. Chile.

Symphodon anomalum (Harold, 1874) **n. comb.** (figs 882, 897)

Aphodius anomalus Harold, 1874: 185

Aphodius (*Symphodon*) *anomalus*; A. Schmidt, 1913: 128; G. Dellacasa, 1990c: 155

TYPE LOCALITY: Chili [Chile].

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (lectotype female examined).

DESCRIPTION. Length 6-8 mm, strongly elongate, moderately convex, feebly shiny, sparsely and shortly pubescent. Dirty testaceous, pronotum on sides and elytral apex yellowish; antennae and legs brownish. Head with epistome feebly gibbous, sparsely and finely punctured; clypeus semicircular; genae angulate, distinctly more protruding than eyes; frontal suture distinctly impressed, not tuberculate; front depressed at middle. Pronotum exceptionally short, strongly transverse, finely but almost regularly punctured, lateral punctures shortly setigerous; sides rounded with elongate cilia; hind angles widely truncate and inward sinuate; base not bordered; disc posteriorly with median feeble longitudinal groove. Scutellum feebly concave, basal half almost densely punctured. Elytra three times longer than pronotum, feebly convex, distinctly microreticulate so rather dull; striae almost distinctly impressed, feebly crenulate; third and fourth ones distinctly shortened, joined each other before apex; interstices feebly convex; odd ones more strongly convex, with central row of shortly setigerous and superficial punctures.

Fore tibiae short, subquadrately widened apically, outer margin biangulate, the two distal outer teeth inferiorly joined; apical spur short and acuminate. Middle and hind tibiae slender; last tarsal segment with strong claws. Apical spur of hind tibiae nearly as long as first tarsal segment, latter longer than following two combined. Male unknown.

DISTRIBUTION. The species is known from Central Chile (Chillan Prov.) only.

Genus *TETRACLIPEOIDES* A. Schmidt, 1913

Aphodius (Tetraclypeoides) A. Schmidt, 1913: 139; M. Dellacasa, 1988a (1987): 397; G. Dellacasa & Gordon, 1994: 164

Tetraclypeoides; Paulian, 1942: 45

Aphodius (Aphodius Artengruppe *Tetraclypeoides*); Endrödi, 1960b: 123

Aphodius (Artengruppe *Tetraclypeoides*); Endrödi, 1964a: 104

TYPE SPECIES: *Aphodius denticulatus* Haldeman, 1848 (subsequent designation: Paulian, 1942).

DESCRIPTION. Medium size species (length 5-7.5 mm), exceptionally small size species (length 3-4 mm), oval elongate, convex, shiny, glabrous or nearly glabrous. Blackish or piceous, rarely with yellowish spotted elytra. Head with epistome convex, punctured, with short transverse carina; clypeus sinuate at middle, more or less strongly quadridenticulate, distinctly bordered, border shortly bristled; genae obtuse, densely and very elongately ciliate, more protruding than eyes; latter medium sized; frontal suture raised, not or feebly tuberculate. Pronotum convex, doubly punctured; sides and base thinly but distinctly bordered. Scutellum small, pentagonal with sides parallel toward base, punctulate. Elytra convex, distinctly striate; interstices feebly convex, finely and sparsely punctured, apically shortly pubescent or glabrous; epipleurae quite ciliate. Fore tibiae distally tridentate and proximally distinctly serrulate; upper side faintly and sparsely punctured. Middle and hind tibiae at inner margin elongately densely pubescent; with strong transverse carinae on outer face; apically fimbriate with spinules usually short and equal. Pygidium finely, densely and elongately pubescent; its apical margin sparsely but very elongately ciliate. Sexual dimorphism shown in males by less coarse punctation of epistome; by strong frontal suture; by stouter fore tibiae apical spur; by inner margin of hind tibiae densely and elongately ciliate. Aedeagus rather stout; paramera moderately elongate, apically regularly rounded. Epipharynx moderately sinuate at front margin, widely rounded at sides; epitorma wide; corypha strongly protruding frontward with two short, stout, not acuminate apical spiculae; pedia narrowly pubescent anteriorly near epitorma only and with a row of stout spines mixed; chaetopariae dense and elongate.

DISTRIBUTION. Nearctic, Neotropical and Afrotropical (?) region.

REMARKS. Almost certainly Afrotropical taxa do not pertain to this genus.

Tetraclypeoides denticulatus (Haldeman, 1848) (figs 883, 898-900)

Aphodius denticulatus Haldeman, 1848: 104

Aphodius (Tetraclypeoides) denticulatus; A. Schmidt, 1913: 139; M. Dellacasa, 1988a (1987): 119; G. Dellacasa & Gordon, 1994: 166

Tetraclypeoides denticulatus Paulian, 1942: 45

TYPE LOCALITY: "Eastern side of the Rocky Mountains" [U. S. A.].

TYPE DEPOSITORY: Museum of Comparative Zoology, Harvard University. Cambridge, MA (U.S.A.) (type not examined).

DESCRIPTION. Length 5.5-7.5 mm, oblong-oval, convex, shiny, nearly glabrous. Piceous; head anteriorly, scutellum and elytral suture paler; under side, legs and antennae ferrugineous. Head with epistome moderately gibbous, distinctly and rather regularly punctured, at center shortly, transversely carinate; clypeus broadly triangularly, inwardly sinuate at middle, acutely quadridentate and distinctly sinuate at sides; genae obtuse, more protruding than eyes; frontal suture raised, feebly trigibbous. Pronotum strongly convex, faintly narrowed frontward, doubly and rather regularly punctured; sides feebly arcuate, distinctly bordered, sparsely yellowish ciliate; hind angles broadly rounded; base thinly but distinctly bordered. Scutellum microreticulate, punctured, subcarinate apically. Elytra distinctly convex, slightly widened posteriorly; striae deep, rather sparsely punctured, faintly crenulate; interstices feebly convex, shiny, finely punctured, punctures arranged in nearly regular lateral rows, apically shortly and sparsely pubescent. Hind tibiae superior apical spur longer than first tarsal segment; latter longer than following two combined. Male: epistome relatively more sparsely punctured; fore tibiae apical spur stouter; inferior apical spur of middle tibiae less than one third as long as superior one; hind tibiae densely and elongately ciliate at inner margin. Female: epistome relatively more densely punctured; fore tibiae apical spur slender; inferior apical spur of middle tibiae as long as half of superior one; hind tibiae normally ciliate at inner margin.

DISTRIBUTION. Canada; U.S.A.: from Wyoming to New Mexico.

Genus *TEUCHESTES* Mulsant, 1842

Teuchestes Mulsant, 1842: 176; Paulian, 1942: 24; Ádám, 1994: 13

Aphodius (*Teuchestes*); Reitter, 1892: 178; Paulian, 1959: 107 (as synonym of *Otophorus*); G. Dellacasa, 1983: 414

Colobopterus (Artengruppe *Teuchestes*); Endrödi, 1964a: 43

Colobopterus (*Teuchestes*); Landin, 1974: 236

Colobopterus (group *Teuchestes*); Endrödi & Rakovič, 1981: 35

TYPE SPECIES: *Scarabaeus fossor* Linné, 1758 (monotypy).

DESCRIPTION. Medium or large size species (length 7-15 mm), strongly convex, short, shiny, glabrous. Blackish; elytra sometimes brownish, reddish or yellowish, rarely blackish with large yellow discal spot, or black with yellow spots. Head with epistome gibbous, punctured; clypeus sinuate at middle, rounded at sides, faintly bordered but with margin distinctly upturned and glabrous; genae obtusely angulate or rounded, sparsely ciliate, more protruding than eyes; latter rather small; frontal suture tuberculate, median tubercle conical and acuminate. Pronotum strongly convex, rounded at sides, deeply sinuate up to the hind angles; front margin and base bordered or not. Scutellum very large. Elytra strongly and regularly convex, striae punctured, either crenulate or not; interstices either flat or more or less distinctly convex. Fore tibiae stout and often truncate at front margin; distally tridentate and proximally serrulate at outer margin;

upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with short and equal spinules. Pygidium rugose, shortly pubescent. Sexual dimorphism significantly shown in males by tubercles of frontal suture relatively stronger; by fore tibiae apical spur usually extremely broad and spatulate; by pronotum distinctly foveolate anteriorly at middle; by hind tibiae generally flattened and remarkably enlarged at their apical half. Aedeagus with tegmen strongly sclerotized; paramera elongate, frequently curved apically. Epipharynx with a belt of haired lobes at front margin, rounded at sides; epitorma nearly faint toward corypha; latter triangularly widened frontward and with short apical spiculae arranged longitudinally; chaetopariae dense and rather elongate.

DISTRIBUTION. Holarctic, Oriental and Afrotropical region.

Teuchestes fossor (Linné, 1758) (figs 893, 901-903)

Scarabaeus fossor Linné, 1758: 348

Teuchestes fossor; Mulsant, 1842: 176; Paulian, 1942: 24; Ádám, 1994: 13

Aphodius fossor; Erichson, 1847b: 799

Aphodius (*Teuchestes*) *fossor*; Horn, 1887: 4; Landin, 1956b: 8 (type location)

Aphodius (*Otophorus*) *fossor*; Paulian, 1959: 108; Baraud, 1977: 62

Colobopterus (*Teuchestes*) *fossor*; Landin, 1974: 236

TYPE LOCALITY: "Suecia" [Sweden] (conventionally restricted).

TYPE DEPOSITORY: Linnean Society collection. London (type not examined).

DESCRIPTION. Length 10-15 mm, short, stout, strongly convex shiny, glabrous. Black; sometimes either elytra brownish basally blackish or elytra quite shiny reddish. Head with epistome gibbous and with transverse carina, subrugosely punctured; clypeus moderately sinuate at middle, rounded at sides, front margin narrow but distinctly evenly upturned; genae rounded, more protruding than eyes; frontal suture distinct and strongly tuberculate. Pronotum strongly convex, broad and shiny; with few large punctures irregularly scattered, more dense at sides; front margin not bordered; sides bordered and strongly sinuate before hind angles; latter obtusely truncate; base bisinuate, completely and strongly bordered. Scutellum very large, flat, finely and superficially punctured only in the basal half, angularly narrowed toward apex and acuminate. Elytra very convex, shiny; striae fine and superficially punctured, not crenulate; interstices nearly flat, smooth. Hind tibiae superior apical spur as long as first tarsal segment; latter as long as following three combined. Male: median tubercle of frontal suture conical, curved behind; epistomal carina very evident; pronotum with distinct anterior foveola at middle of front margin, smooth on disc; fore tibiae apical spur almost parallel-sided, apically subtruncate. Female: frontal suture with relatively weaker tubercles; pronotum more densely punctured, without anterior foveola; fore tibiae apical spur slender and apically rather acuminate.

DISTRIBUTION. Holarctic region.

Genus *TRICHAPHODIELLUS* A. Schmidt, 1913 **stat. nov.**

Aphodius (*Trichaphodiellus*) A. Schmidt, 1913: 167; G. Dellacasa & Gordon, 1997: 372

TYPE SPECIES: *Aphodius brasiliensis* Laporte de Castelnau, 1840 (monotypy).

DESCRIPTION. Medium size species (length 6-8 mm); oblong, moderately shiny, glabrous. Reddish-testaceous; epistome and pronotal disc brownish; elytra yellowish-testaceous, darker on disc and with preapical indefinite brownish spots. Head with epistome moderately gibbous, nearly smooth, with a more or less distinct central tubercle anteriorly from the arcuate and not tuberculate frontal suture; clypeus feebly sinuate at middle, rounded at sides, thickly bordered, border glabrous; genae obtusely rounded, very shortly ciliate, more protruding than eyes; latter rather large. Pronotum transverse, doubly and sparsely punctured; rounded and thinly bordered at sides; hind angles obtusely subtruncate; base not bordered. Scutellum small, triangularly elongate. Elytra oblong, distinctly striate; striae rather superficial; interstices feebly convex, smooth. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side coarsely, densely and rather regularly punctured. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with equal spinules. Pygidium with sparse, very short and recumbent pubescence; its apical margin nearly glabrous. Sexual dimorphism shown in males by more distinct epistomal tubercle; by pronotum relatively more sparsely punctured and anteriorly with a backward groove-shaped median small foveola; by fore tibiae apical spur stout and obliquely truncate apically; by metasternal plate concave. Aedeagus elongate with paramera, in lateral view, distinctly curved and acuminate apically. Epipharynx sinuate at middle of front margin, widely rounded at sides; epitorma conical; corypha with two strong and elongate apical spiculae; pedia densely pubescent, with several, elongate and rather densely antero-laterally arranged spines; chaetopariae dense and elongate.

DISTRIBUTION. Neotropical region.

Trichaphodiellus brasiliensis (Laporte de Castelnau, 1840) **n. comb.** (figs 894, 904-906)

Aphodius brasiliensis Laporte de Castelnau, 1840: 85

Aphodius (*Trichaphodiellus*) *brasiliensis*; A. Schmidt, 1913: 167; G. Dellacasa & Gordon, 1997: 372

TYPE LOCALITY: "Bresil" [Brazil].

TYPE DEPOSITORY: probably Muséum national d'Histoire naturelle. Paris (type not examined).

DESCRIPTION. Length 6-8 mm; oblong, convex, subshiny, glabrous. Reddish-testaceous; epistome and pronotal disc darker; elytra testaceous-yellowish, rather dark on disc, with more or less indistinct preapical brownish spots. Head with epistome moderately gibbous, nearly smooth, backward, before arcuate and not tuberculate frontal suture, with a central tubercle more or less elevate; clypeus feebly sinuate at middle, rounded at sides; genae obtusely rounded, more protruding than eyes. Pronotum doubly and sparsely punctured, large punctures missing on disc but dense at sides; latter rounded and thinly bordered; hind angles obtusely truncate; base bisinuate, not bordered. Scutellum elongate, smooth, apically subcarinate. Elytra oblong; distinctly striate; striae superficially punctured near base, impunctate on disc; interstices feebly convex, alutaceous. Hind tibiae superior apical

spur shorter than first segment of tarsi; latter longer than following three combined. Male: epistomal tubercle relatively stronger; pronotum regularly transverse, more sparsely punctured, anteriorly with median distinct foveola backward groove-shaped; fore tibiae apical spur stout and obtusely truncate apically; metasternal plate concave. Female: epistoma tubercle relatively weaker; pronotum narrowed frontward, relatively more densely punctured; fore tibiae apical spur slender and acuminate apically; metasternal plate nearly flat.

DISTRIBUTION. Colombia, Venezuela, Ecuador, Peru, Brazil, Bolivia.

REMARKS. The species is recorded also from Mexico by A. Schmidt (1907b) but we have never seen specimens from this country.

Genus *TRICHAPHODIODES* Paulian, 1942

Trichaphodioides Paulian, 1942: 52

Aphodius (*Trichaphodioides*); Endrödi, 1960b: 71 (as synonym of *Trichaphodius*); M. Dellacasa, 1991: 19 (as valid subgenus)

TYPE SPECIES: *Aphodius calcaratus* Boheman, 1857 (original designation).

DESCRIPTION. Small or medium size species (length 3-6 mm), oval-elongate, shiny with diaphanous tegument; convex; either glabrous or more or less diffusedly pubescent. Head and pronotum brownish with lateral margins paler; elytra testaceous with more or less variegate darker spots. Head narrowed frontward; epistome feebly gibbous, finely punctured; clypeus anteriorly subtruncate, rarely faintly sinuate at middle, rounded and regularly curved at sides, bordered, border not ciliate; genae small, rounded, shortly or not at all ciliate, feebly more protruding than eyes; latter rather large; frontal suture impressed, not tuberculate. Pronotum transverse, doubly punctured, larger punctures on sides only; hind angles subtruncate or obtusely rounded; base not bordered. Scutellum small, triangular. Elytra oval, largest width at basal third, finely striate, first stria as wide as or slightly wider than second apically; interstices flat or feebly convex. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side coarsely but rather sparsely punctured. Middle and hind tibiae with feeble transverse carinae on outer face, apically fimbriate with spinules elongate and progressively unequal. Hind tarsi longer than tibiae. Hind tibiae superior apical spur as long as first tarsal segment; latter as long as or longer than following three combined. Pygidium with some sparse straight setae. Sexual dimorphism shown in males by relatively more wide head; by epistoma more finely punctured; by first and second segment of labial palps strongly elliptically broadened; by pronotum not narrowed frontward, simply, finely punctured on disc; by elytra usually pubescent at least laterally; by fore tibiae often widened and more elongate, their apical spur strong and sometimes apically hooked; by segments of middle tarsi sometimes stouter, their claws apically hooked. Aedeagus with rather short paramera, apically curved and preapically with a tuft of more or less elongate setae. Epipharynx with anterior margin sinuate at middle; epistoma widened at base; corypha with two apical spiculae not reaching front margin; pedia densely pubescent with some stouter antero-lateral setae; tormae short; chaetopariae slender and densely arranged.

DISTRIBUTION. Afrotropical region.

REMARKS. The taxa pertaining to this genus badly need complete taxonomical revision.

Trichaphodioides calcaratus (Boheman, 1857) (figs 895, 907-909)

Aphodius (Div. *S* Erichson) *calcaratus* Boheman, 1857: 353

Aphodius (*Trichaphodius*) *calcaratus*; A. Schmidt, 1913: 136

Trichaphodioides calcaratus; Paulian, 1942: 52

Aphodius (*Aphodius* Artengruppe *Trichaphodius*) *calcaratus*; Endrödi, 1960b: 155

Aphodius (*Trichaphodioides*) *calcaratus*; M. Dellacasa, 1991: 34

TYPE LOCALITY: "juxta fluvium Gariep" [Orange river, South Africa].

TYPE DEPOSITORY: Naturhistoriska Riksmuseet. Stockholm (lectotype male examined).

DESCRIPTION. Length 4-5 mm, oval-elongate, moderately shiny, convex; head and pronotum glabrous, elytra laterally and apically pubescent. Head and pronotum dark brown; clypeus and lateral margins of pronotum yellowish; elytra brown-yellow, juxtasutural interstice, preapical spot broadened from third to sixth interstice and sometimes with a wide cloudy discal spot brown. Head rather wide, epistome feebly gibbous, throughout regularly and sparsely punctured; clypeus anteriorly truncate, rounded at sides; genae small, rounded, feebly more protruding than eyes; frontal suture very fine, not tuberculate. Pronotum transverse, doubly punctured; smaller punctures like those on head and throughout scattered; larger ones, irregular and sparse, placed distally on disc only; sides thinly bordered, substraight, feebly widened toward base; hind angles obliquely truncate; base bisinuate, not bordered. Scutellum with few small punctures toward base. Elytra oval-elongate, not denticulate at shoulder; striae fine, subcrenulate; first one wider than second apically; interstices nearly flat, very finely sparsely punctured; on lateral interstices and toward apex punctures finely but distinctly setigerous. Male: epistome finely, regularly, sparsely punctured; fore tibiae apical spur truncate apically and somewhat shorter, downwardly bent and apically inwardly denticulate; segments of middle tarsi distinctly stouter than those of hind tarsi. Female: epistome finely punctured but with some larger punctures irregularly mixed; fore tibiae apical spur regularly acuminate apically; segments of middle tarsi identical with those of hind tarsi.

DISTRIBUTION. Transvaal (Kruger National Park).

REMARKS. The **lectotype male, herein designated**, bears following labels:

- 1) white, printed: Caffraria;
- 2) white, printed: J. Wahlb.;
- 3) white, printed: type;
- 4) red, printed: Typus
- 5) red, printed: 41
- 6) red: 231 (printed) 84 (handwritten),
- 7) green-blue, printed: Riksmuseet. Stockholm;
- 8) red, handwritten: *Aphodius calcaratus* Boheman, 1857. Lectotype male, Bordat & G. Dellacasa des. 1996.

Most of "varieties" and "colour variations" of *Aphodius calcaratus* sensu auctorum are good species rather easily identifiable by aedeagal differences and by the shape of males fore tibiae.

Genus *TRICHAPHODIUS* A. Schmidt, 1913*Aphodius* (*Trichaphodius*) A. Schmidt, 1913: 135; Balthasar, 1964: 163; Bordat, 1989: 295*Trichaphodius*; Paulian, 1942: 53*Aphodius* (*Aphodius* Artengruppe *Trichaphodius*); Endrödi, 1960b: 147*Aphodius* (Artengruppe *Trichaphodius*); Endrödi, 1964a: 152*Aphodius* (group *Trichaphodius*); Endrödi & Rakovič, 1981: 46TYPE SPECIES: *Aphodius humilis* Roth, 1851 (subsequent designation: Paulian, 1942).

DESCRIPTION. Small size species (length 2.5-5 mm), oval-elongate, moderately convex, more or less shiny, quite pubescent. Yellowish or more or less dark brownish; elytra brown-yellowish with a small preapical spot paler. Head with epistome nearly flat, punctured; clypeus faintly sinuate at middle, rounded at sides, thinly bordered, border glabrous; genae obtusely rounded, shortly ciliate or glabrous, not or more protruding than eyes; latter large; frontal suture grooved, not tuberculate. Pronotum transverse, coarsely and densely punctured on disc; lateral margins thinly bordered; hind angles obtusely rounded; base either thinly bordered with border more or less widely interrupted at middle or not at all bordered. Scutellum small, triangular, at base nearly as wide as first two elytral interstices. Elytra regularly oval-elongate, with or without denticle at shoulder; punctato-striate; first stria as wide as second apically; interstices with setigerous punctures usually arranged in longitudinal rows. Pygidium with some straight setae on disc and with two ones at apical margin. Fore tibiae tridentate and proximally serrulate at outer margin; upper side coarsely but rather sparsely and irregularly punctured. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with elongate spinules progressively unequal. Hind tibiae superior apical spur shorter than first tarsal segment; latter as long as or longer than following three combined. Sexual dimorphism shown in males by head and pronotum relatively wider and more finely punctured; fore tibiae often broadened or sinuate at inner margin before apex, their apical spur often stouter, more elongate or hooked apically. Aedeagus with paramera short, curved and pubescent apically. Epipharynx transverse; front margin elongately ciliate and deeply sinuate at middle; epitorma more or less widely triangular; corypha with two strong apical spiculae; pedia densely pubescent with some stouter chaetae mixed; chaetopariae slender and densely arranged; tormae short.

DISTRIBUTION. Afrotropical, Oriental, Nearctic (?) and Neotropical (?) region.

Trichaphodius humilis (Roth, 1851) (figs 896, 910-912)*Aphodius humilis* Roth, 1851: 132*Oxyomus humilis*; Harold, 1871b: 21*Aphodius humilis*; Quedenfeldt, 1884: 280*Aphodius* (*Trichaphodius*) *humilis*; A. Schmidt, 1913: 136; M. Dellacasa, 1991: 34*Trichaphodius humilis*; Paulian, 1942: 57*Aphodius* (*Aphodius* Artengruppe *Trichaphodius*) *humilis*; Endrödi, 1960b: 148*Aphodius* (group *Trichaphodius*) *humilis*; Endrödi & Rakovič, 1981: 46

TYPE LOCALITY: "Abyssinie" [Ethiopia].

TYPE DEPOSITORY: Zoologische Staatssammlung. München (lectotype male examined).

DESCRIPTION. Length 3-4 mm, oval-elongate, feebly convex, moderately shiny, quite pubescent. Brown-yellowish, with epistome, pronotum disc and elytral transverse band widened from third to seventh interstice, darker; sometimes elytral striae darker also. Head frontward narrowed; epistome feebly gibbous, simply, regularly, finely, rather densely and roughly punctured, punctures setigerous, setae backward recumbent; clypeus anteriorly subtruncate, rounded at sides; genae small, subrectangular, more protruding than eyes; frontal suture impressed, not tuberculate. Pronotum feebly transverse; punctured, punctation like that on head but toward front margin somewhat finer; lateral margin nearly straight, larger width toward base; hind angles obliquely truncate, feebly inward sinuate; base distinctly bisinuate, feebly bilobate, not bordered. Scutellum with few rough setigerous punctures. Elytra regularly oval, not denticulate at shoulder; striae punctured, not crenulate, punctures apically faint; interstices nearly flat, finely punctured; setigerous punctures arranged in longitudinal rows, their setae backward recumbent. Fore tibiae normally shaped, their apical spur regularly curved inward and apically acuminate. Hind tibiae superior apical spur a quarter shorter than first tarsal segment; latter slightly longer than following two combined. Male: head relatively less narrowed frontward; clypeus anteriorly truncate; epistome and pronotum disc more sparsely punctured. Female: head relatively more narrowed frontward; clypeus subsinuate at middle; epistome and pronotum disc more densely punctured.

DISTRIBUTION. Oriental Africa, Tchad.

REMARKS. The taxon, intended *sensu lato*, may be considered widely distributed in whole Afrotropical and Oriental region, Madagascar excluded. Really, *humilis* complex includes, at least, twenty Afrotropical species (Bordat, 1989). Records from Sri Lanka, India, Nepal, etc., may be probably referred to other congeneric taxa, well distinguishable mainly by aedeagal differences.

Genus *TRICHONOTULOIDES* Balthasar, 1945 **stat. nov.**

Aphodius (Trichonotuloides) Balthasar, 1945: 43

TYPE SPECIES: *Aphodius fossulatipennis* Balthasar, 1945 (monotypy).

DESCRIPTION. Small size species (length about 4 mm), oblong-oval, moderately convex, subshiny; head glabrous, sides of pronotum and elytral interstices shortly pubescent. Dark brownish. Head rather large with epistome feebly gibbous at centre, regularly punctured; clypeus slightly sinuate at middle, rounded at sides, rather thinly bordered, border very shortly bristled; genae obtusely rounded, shortly ciliate, distinctly more protruding than eyes; latter medium sized; frontal suture not tuberculate; front densely and coarsely punctured. Pronotum transverse, doubly, rather regularly, very densely and coarsely punctured; larger punctures cariose; lateral margins nearly straight, thickly bordered, border glabrous, subsinuate before hind angles; latter obtusely truncate and inwardly sinuate; base bisinuate, distinctly bordered. Scutellum small, elongately triangular with curved sides. Elytra oval-elongate, denticulate at shoulder, deeply crenato-striate; interstices convex, coarsely punctured, punctures shortly but distinctly setigerous. Fore tibiae distally tridentate and proximally feebly crenulate at outer margin; upper side very finely and sparsely punctured. Middle and hind tibiae with rather strong

transverse carinae on outer face; apically fimbriate with short and equal spinules. Pygidium with short and recumbent pubescence, sparsely mixed few straight and relatively elongate setae; its apical margin sparsely but very elongately ciliate. Sexual dimorphism might be shown in males (female unknown) by metasternal plate deeply spoon-shaped, punctured and distally pubescent. Aedeagus with tegmen slender and very elongate; paramera very short, strongly curved and acuminate apically. Epipharynx transverse, slightly sinuate at fore margin, rounded at sides; epitorma conical; corypha with elongate apical spiculae distinctly protruding beyond fore margin; chaetopariae stout and elongate; pedia densely pubescent with several lateral spines subserially mixed.

DISTRIBUTION. Southern Mexican Transition Zone (Guatemala).

Trichonotuloides fossulatipennis (Balthasar, 1945) **n. comb.** (figs 913, 917-919)

Aphodius (*Trichonotuloides*) *fossulatipennis* Balthasar, 1945: 44

TYPE LOCALITY: Guatemala.

TYPE DEPOSITORY: Balthasar collection, Národní Muzeum. Prague (holotype male examined).

DESCRIPTION. Length about 4 mm, oblong-oval, moderately convex, subshiny; head glabrous, sides of pronotum and elytral interstices shortly pubescent. Dark brownish; clypeal margin, fore angle of pronotum and elytral apex ferruginous; antennal club piceous; legs brown-reddish; inferior side brownish. Head rather large; epistome slightly gibbous at centre, somewhat depressed toward clypeal margin, distinctly and regularly punctured, punctation sparser on median gibbosity; clypeus feebly sinuate at middle, rounded at sides; genae obtusely rounded, shortly ciliate, distinctly more protruding than eyes; frontal suture somewhat raised, not at all tuberculate; front regularly and coarsely punctured, punctation coarser than on epistome. Pronotum transverse, feebly convex, doubly, rather regularly and very densely and coarsely punctured; large punctures, three to four times larger than small punctures, distinctly cariose and on sides shortly piligerous, near base with a belt of larger contiguous and coarser punctures; sides nearly straight, thickly bordered, border glabrous, subsinuate before hind angles; latter obliquely truncate and inwardly sinuate; base feebly bisinuate, distinctly bordered. Scutellum basally and laterally coarsely punctured, toward apex subcarinate and smooth. Elytra oval-elongate, with small but distinct humeral denticle, broadly and deeply striate; striae strongly crenulate on disc, toward apex canaliculate and indistinctly punctured; interstices convex, densely, coarsely and rather irregularly punctured, toward apex punctures more superficial and somewhat confusedly confluent, quite densely and shortly pubescent. Hind tibiae superior apical spur distinctly shorter than first tarsal segment; latter as long as following three combined. Male: fore tibiae apical spur slender and acuminate; metasternal plate spoon-shaped, punctured and shortly pubescent distally. Female unknown.

DISTRIBUTION. The species is known from type locality only with not more detailed locality label.

Genus *TRICHONOTULUS* Bedel, 1911

Trichonotus Mulsant, 1842: 294 (nec *Trichonotus* Block & Schneider, 1801, Pisces)

Aphodius (*Amidorus* groupe *Trichonotus*); Mulsant & Rey, 1870b (1869): 500

Aphodius (*Trichonotus*); Mulsant & Rey, 1871 (1870): 474

Aphodius (*Trichonotulus*); Bedel, 1911a: 378 (*nomen novum*); Balthasar, 1964: 314; G. Dellacasa, 1983: 416

Trichonotulus; Paulian, 1942: 50; Ádám, 1994: 14

Aphodius (*Aphodius* Artengruppe *Trichonotulus*); Endrödi, 1960b: 146

Aphodius (Artengruppe *Trichonotulus*); Endrödi, 1964a: 149

Aphodius (group *Trichonotulus*); Endrödi & Rakovič, 1981: 45

TYPE SPECIES: *Scarabaeus scrofa* Fabricius, 1787 (monotypy).

DESCRIPTION. Small size species (length 3-5 mm), subelongate, convex, more or less dull, quite pubescent. Blackish or dark brownish; sometimes elytra reddish or yellowish. Head with epistome feebly convex, finely punctured, punctures shortly setigerous; clypeus feebly sinuate at middle, usually rounded at sides, thinly bordered, border glabrous and slightly upturned; genae small, rounded, ciliate, barely more protruding than eyes; latter medium sized; frontal suture more or less distinctly impressed, usually not tuberculate. Pronotum convex, quite pubescent, distinctly punctured; sides bordered; hind angles obtuse; base usually bordered. Scutellum small, elongate, subpentagonal, parallel-sided basally. Elytra moderately convex, oval-elongate, denticulate at shoulder; striae deep, crenulate; interstices usually convex, punctured, quite serially pubescent. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side nearly smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with spinules stout and irregularly unequal. Pygidium with short, rather dense recumbent pubescence, mixed few very elongate straight setae. Sexual dimorphism shown in males mainly by pronotum not narrowed frontward and by metasternal plate distinctly concave and pubescent. Aedeagus with paramera short, rounded and submembranous apically. Epipharynx sinuate at front margin, widely rounded at sides; epitorma drop-shaped, slightly widened toward apex; corypha with very elongate protruding apical spiculae; pedia densely pubescent with sparse stout spines irregularly scattered; chaetopariae stout and densely arranged.

DISTRIBUTION. Holarctic, Oriental and Afrotropical (?) region.

Trichonotulus scrofa (Fabricius, 1787) (figs 914, 920-922)

Scarabaeus scrofa Fabricius, 1787: 11

Trichonotus scropha; Mulsant, 1842: 294 (incorrect spelling for *scrofa*)

Aphodius scrofa; Erichson, 1848: 857

Aphodius (*Trichonotus*) *scrofa*; Mulsant & Rey, 1871 (1870): 474

Aphodius (*Trichonotulus*) *scrofa*; Bedel, 1911a: 85; Landin, 1956a: 219 (lectotype designation)

Trichonotulus; Paulian, 1942: 50; Ádám, 1994: 14

TYPE LOCALITY: "Halaë Saxonum" [Germany].

TYPE DEPOSITORY: Zoological Museum. Kiel (type not examined).

DESCRIPTION. Length 3-4 mm, oval-subelongate, convex, nearly dull, quite pubescent. Brown-blackish; elytra apically shadowy reddish; sometimes elytra quite reddish. Head with epistome feebly gibbous, finely and regularly punctured, sometimes punctation coarser distally, punctures shortly setigerous; clypeus sinuate at middle, rounded at sides; genae rounded, barely more protruding than eyes; frontal suture nearly faint, not at all tuberculate. Pronotum convex, quite pubescent, densely punctured, distinctly microreticulate so rather dull; hind angles obtuse; base thinly bordered. Scutellum punctured, strongly pubescent, parallel-sided basally, apically obtuse. Elytra oval-elongate, moderately convex; striae very deep, moderately punctured, distinctly crenulate; interstices flat or nearly flat, superficially microreticulate so rather shiny, with two, nearly regular longitudinal rows of granulose and shortly setigerous punctures, setae backward recumbent. Hind tibiae superior apical spur as long as first tarsal segment; latter shorter than following two combined. Male: pronotum transverse, not narrowed frontward; metasternal plate concave, distinctly microreticulate, pubescent. Female: pronotum relatively narrower frontward; metasternal plate flat, faintly microreticulate, superficially punctured, very shortly and sparsely pubescent.

DISTRIBUTION. Holarctic region.

Genus *TRISTAPHODIUS* Balthasar, 1932 **stat. nov.**

Aphodius (*Tristaphodius*) Balthasar, 1932a: 34; Balthasar, 1964: 376 (as synonym of *Agrilinus*); M. Dellacasa, 1988a (1987): 257 (as synonym of *Agoliinus*); Červenka, 1994: 18 (valid subgenus)

TYPE SPECIES: *Aphodius mortuorum* Balthasar, 1932 (monotypy).

DESCRIPTION. Medium size species (length 5.5-7mm), widely oval, moderately convex, nearly quite strongly microreticulate so dull; head and pronotum glabrous, elytra with extremely fine and short pubescence laterally and toward apex. Brown-blackish. Head with epistome feebly gibbous, punctulate; clypeus sinuate at middle, rounded at sides, faintly bordered, border glabrous; genae obtusely rounded, ciliate, more protruding than eyes; latter rather small; frontal suture very fine, feebly tuberculate. Pronotum transverse, doubly punctured, with trace of median longitudinal groove; sides distinctly bordered, faintly explanate before hind angles; latter obtusely rounded; base feebly bisinuate, bordered. Scutellum small, widely triangular, at base nearly as wide as first three elytral interstices. Elytra broadly oval, with small humeral denticle; finely punctato-striate; striae apically not joined one another and not widened; interstices flat, nearly unpunctured. Fore tibiae distally tridentate and proximally denticulate at outer margin; upper side sparsely but rather regularly punctured. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with nearly equal spinules. Pygidium with few apical setae. Sexual dimorphism shown in males by median tubercle of frontal suture relatively stronger, bifid at tip; pronotum more widely transverse. Aedeagus with stout paramera, rounded apically. Epipharynx transverse; front margin sinuate at each side; epitorma widened basally; corypha with six strong apical spiculae; pedia pubescent, with some stouter spines sparsely mixed; chaetopariae rather stout and short.

DISTRIBUTION. Eastern Palearctic region.

REMARKS. This genus was synonymized by Balthasar himself (1964) with *Agrilinus* which, for this author, included also *Agoliinus*. Nevertheless, though aedeagal and epipharyngeal features are similar to those of *Agrilinus*, this genus-group taxon is validated by peculiar morphological habitus features as already stated by Červenka (1994).

Tristaphodius mortuorum (Balthasar, 1932) **n. comb.** (figs 915, 923-925)

Aphodius (*Tristaphodius*) *mortuorum* Balthasar, 1932a: 35; Červenka, 1994: 18

Aphodius (*Agrilinus*) *mortuorum*; Balthasar, 1964: 383

Aphodius (*Agoliinus*) *mortuorum*; M. Dellacasa, 1988a (1987): 258

TYPE LOCALITY: Tatsienlu-Kiulung, Szetschwan Prov., Mittel-China.

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 5.5-7 mm, widely oval, moderately convex, upper side strongly microreticulate so dull, inferiorly shiny; head and pronotum glabrous, elytra very finely and shortly pubescent, hairs slightly denser laterally and toward apex. Brown-blackish, sometimes elytra brown. Head with epistome feebly gibbous, simply, finely and sparsely punctured throughout, punctation nearly faint among strong microreticulation; clypeus rather feebly sinuate at middle, widely rounded at sides, slightly upturned distally; genae obtusely rounded, more protruding than eyes; frontal suture fine, feebly tuberculate. Pronotum widely transverse, with a superficial median longitudinal narrow groove; faintly foveolate nearly front angles, foveolae more distinct before hind angles where sides seem to be feebly explanate; doubly and sparsely punctured; large punctures, twice to three times larger than small punctures, sparser at centre of disc; sides thinly bordered, subparallel toward base; base feebly bisinuate, bordered. Scutellum with few basal punctures. Elytra widely oval; finely striate; striae feebly crenulate, shiny at bottom; interstices slightly convex, sparsely, finely and nearly faintly punctured. Fore tibiae apical spur regularly acuminate toward apex, their inferior carina with a small denticle at proximal third. Hind tibiae superior apical spur shorter than first tarsal segment; latter as long as following three combined. Male: median tubercle of frontal suture distinct, bifid at tip; pronotum relatively more widely transverse and less convex. Female: tubercles of frontal suture weaker; pronotum relatively narrowed frontward and more convex.

DISTRIBUTION. Sikkim, China.

Genus *TURANELLA* Semenov, 1905

Isochirus Reitter, 1892: 171 (nec *Isochire* Leach, 1818 = *Isochirus* Leach, emend. Agassiz, 1843; Crustacea)

Turanella Semenov, 1905: 140 (*nomen novum*); G. Dellacasa, 1989: 61

TYPE SPECIES: *Aphodius latevittis* Reitter, 1887 (monotypy).

DESCRIPTION. Small size species (length 2.5-5 mm), elongate, glabrous, moderately shiny, convex. Blackish, elytra with large longitudinal orange spot. Head with epistome flattened laterally, punctured; clypeus more or less narrowly sinuate at middle,

subdenticulate at sides, thinly bordered, border upturned and rather elongately ciliate; genae rounded, sparsely ciliate, distinctly more protruding than eyes; latter rather large; frontal suture with small central tubercle; first segment of antennae cylindrical, second globous and slightly shorter than first, from third to sixth transverse; maxillary palps exceptionally elongate, longer than antennae. Pronotum convex, subparallel-sided, almost regularly punctured, base and sides distinctly bordered. Scutellum small, pentagonal, basally parallel-sided. Elytra very elongate; striae fine, almost not crenulate; interstices flat, finely punctured. Fore tibiae stout, with three strong distal teeth and proximally serrulate at outer margin; upper side coarsely and sparsely punctured, punctures mostly setigerous. Middle tibiae superior apical spur longer than inferior as well as than first tarsal segment. Hind tibiae apical spurs of the same length and as long as first segment of tarsi. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with spinules short and equal. Tarsi slender and very elongate. Pygidium with apical margin crenulate at middle and therein rather elongately ciliate. Sexual dimorphism shown in males by clypeal sides denticles relatively smaller and not upturned and last segment of maxillary palps strongly elongate. Aedeagus elongate; paramera slender, regularly curved apically. Epipharynx transverse, distinctly sinuate at front margin; epitorma subcylindrical with several short spinules; corypha with two stout apical spiculae distinctly more protruding beyond front margin; pedia with few stout spines widely scattered; chaetopariae stout and short, first distal chaeta distinctly longer than others.

DISTRIBUTION. South-eastern Palearctic region

Turanella latevittis (Reitter, 1887) (figs 916, 930-932)

Aphodius latevittis Reitter, 1887b: 509

Isochirus latevittis; Reitter, 1892: 171

Turanella latevittis; Semenov, 1905: 140; G. Dellacasa, 1989: 62

TYPE LOCALITY: "Turcmenien" [Turkmenistan].

TYPE DEPOSITORY: Magyar Természettudományi Múzeum. Budapest (type not examined).

DESCRIPTION. Length 2.5-4 mm, elongate, convex, moderately shiny, glabrous. Blackish; clypeal margin, antennae and legs reddish; elytra with large testaceous discal spot apically shortened. Head with epistome moderately shiny, widely flattened anteriorly, strongly, sparsely and regularly punctured, microreticulate. Clypeus strongly sinuate at middle, biangulate or bidenticate at sides; genae obtusely rounded, feebly more protruding than eyes; frontal suture shallowly impressed, with a small median conical tubercle. Pronotum strongly convex, almost parallel-sided, enough shiny, distinctly, moderately and regularly punctured, sparsely ciliate at front angles; sides and base thinly but distinctly bordered; hind angles widely rounded. Scutellum impunctate, depressed apically, strongly microreticulate so rather dull. Elytra strongly elongate, convex, moderately shiny, subparallel-sided; striae feebly punctured, faintly crenulate; interstices flat, shiny, with irregular central row of fine punctures, apically with sparse and extremely short hairs; epipleura strong, distinctly upturned at shoulder; sutural apical angles rounded. Fore tibiae short, stout, with apical spur short and stout. Superior apical

spur of hind tibiae as long as first tarsal segment; latter somewhat shorter than following one. Metasternal plate, shiny, concave, with distinct longitudinal groove at middle, more deep and wide backward, sparsely and irregularly punctured, larger punctures elongately setigerous. Male: clypeal teeth relatively smaller and not upturned; last segment of maxillary palps strongly elongate. Female: clypeal teeth relatively more acuminate and distinctly upturned; last segment of maxillary palps shorter and widened apically.

DISTRIBUTION. Central Asia.

Genus *VOLINUS* Mulsant & Rey, 1870

Aphodius (*Volinus*) Mulsant & Rey, 1870b (1869): 537; Reitter, 1892: 218; Bedel, 1911a: 79 (as synonym of *Chilo thorax*); W. Koshantschikov, 1913b: 189 (as valid subgenus); Balthasar, 1964: 214

Volinus; Paulian, 1942: 84; Ádám, 1994: 14

Aphodius (Artengruppe *Volinus*); Endrödi, 1964a: 270

TYPE SPECIES: *Scarabaeus sticticus* Panzer, 1798 (subsequent designation: Reitter, 1892).

DESCRIPTION. Small size species (length 4-5 mm), oblong, moderately convex, rather shiny, nearly glabrous. Blackish, clypeus and sides of pronotum more or less widely yellowish, elytra dirty yellowish with several brown-blackish spots. Head with epistome gibbous, doubly punctured; clypeus faintly sinuate at middle, rounded at sides, thinly bordered, border shortly bristled; genae rounded, shortly ciliate, not more protruding than eyes; latter medium sized; frontal suture distinct, feebly tuberculate. Pronotum transverse, moderately convex, doubly punctured; sides thinly bordered, feebly rounded; base bordered. Scutellum small, amygdaliform, at base somewhat wider than first two elytral interstices, punctured. Elytra oval-elongate, striato-punctate; striae rather deep, crenulate; first stria widened and more strongly impressed from preapical declivity up to apex; interstices feebly convex, sparsely punctured, shortly pubescent toward apex; juxtasutural interstice distinctly widened preapically. Fore tibiae with apical spur regularly acuminate toward apex in both sexes; distally tridentate and proximally not serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with elongate and irregularly unequal spinules. Pygidium with fine, sparse and moderately elongate recumbent pubescence; its apical margin sparsely and rather elongately ciliate. Sexual dimorphism shown in males by distinct median tubercle of frontal suture; pronotum not narrowed frontward, less densely punctured on disc; elytral interstices more densely and elongately pubescent preapically. Aedeagus with rather stout paramera, strongly recurved and widely membranous apically. Epipharynx transverse; front margin elongately ciliate and slightly bisinuate; epitorma widely conical; corypha with six stout apical spiculae protruding beyond front margin; pedia pubescent with some strong chaetae mixed; chaetopariae rather elongate and densely arranged.

DISTRIBUTION. Palearctic region.

Volinus sticticus (Panzer, 1798) (figs 926, 933-935)

Scarabaeus equestris Panzer, 1798: n. 2

Scarabaeus sticticus Panzer, 1798: n. 4

Aphodius sticticus; Mulsant, 1842: 255

Aphodius (Volinus) sticticus; Mulsant & Rey, 1870b (1869): 550; Landin, 1957: 111 (*nomen conservandum*)

Aphodius (Chilo thorax) sticticus; G. Dellacasa, 1983: 237

Volinus sticticus; Ádám, 1994: 14 (as *Volinus equestris* Panzer, 1798)

TYPE LOCALITY: "Silesiae" [Poland].

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 4-5 mm, oblong, moderately convex, feebly shiny, nearly glabrous. Blackish; two lateral subclypeal spots and pronotum sides yellowish; elytra dirty yellow, with blackish striae and with two transverse belts of blackish spots. Head feebly shiny; epistome gibbous, finely, superficially and rather densely punctured; clypeus feebly sinuate at middle, rounded at sides; genae rounded, not more protruding than eyes; frontal suture feebly tuberculate. Pronotum subshiny, distinctly microreticulate, convex, doubly and irregularly punctured; larger punctures sparse; sides bordered, shortly and sparsely ciliate; hind angles obtusely rounded; base thinly bordered. Scutellum curved at sides, not acuminate apically, distinctly microreticulate, sparsely punctured. Elytra oval, convex; striae fine on disc, wider apically, distinctly punctured, crenulate; interstices moderately convex, finely and irregularly punctured, sparsely and rather shortly pubescent apically. Hind tibiae superior apical spur slightly shorter than first tarsal segment; latter nearly as long as following three combined. Male: tubercles of frontal suture relatively more distinct; pronotum not narrowed frontward, less coarsely punctured, larger punctured lacking on disc; fore tibiae apical spur stout. Female: tubercles of frontal suture faint; pronotum narrowed frontward, doubly and rather densely punctured; fore tibiae apical spur slender.

DISTRIBUTION. Europe and South-western Asia.

NOMENCLATURAL REMARKS. Two are the nomenclatural problems regarding this taxon:

a) the primary homonymy of *Scarabaeus sticticus* Panzer, 1798 versus *Scarabaeus sticticus* Linné, 1767. The Linnaean species was already moved to genus *Cetonia* in 1790 (*Systema Naturae*, ed. XIII, cura Gmelin) eight years before *Scarabaeus sticticus* Panzer's description. Thus, taxonomically, the two *Scarabaeus sticticus* species of Linné and Panzer have never simultaneously belonged in the same genus. Anyway, even if this case should be treated as one of primary homonymy it will be less absurd and more realistic to apply "*a priori*" instead than "*a posteriori*" the rules in force for secondary homonymy. Consequently the name *Scarabaeus sticticus* Panzer, 1798, currently used for one of the most well-known and widely distributed Palearctic species, has to be conserved.

b) the junior synonymy of *Scarabaeus sticticus* Panzer, 1798 (Nr. 4) versus *Scarabaeus equestris* Panzer, 1798 (Nr. 2) founded on page precedence. Notwithstanding the recommendation of the Code [69A.3], in this case, the "Principle of the First Reviser" (Art. 24.2) has to be applied. The first revision of these taxa was by Creutzer (1799) who, in his synonymical list, synonymized *equestris* under *sticticus*, but, relatively more

important, the problem was definitely solved by Panzer himself, who, in his "Kritische Revision" (1805) synonymized the name *equestris* versus *sticticus*.

Concluding, as already stated by Landin (1957: 111), and according to practice the valid name of the taxon concerned has to be *Volinus sticticus* (Panzer, 1798).

Genus *XENOHEPTAULACUS* Hinton, 1934

Xenoheptaulacus Hinton, 1934: 613; Blackwelder, 1944: 213 (as synonym of *Oxyomus* Laporte de Castelnau, 1840); G. Dellacasa & Gordon, 1997: 375

TYPE SPECIES: *Xenoheptaulacus carinator* Hinton, 1934 (junior synonym of *Oxyomus tricostatus* Harold, 1869) (monotypy).

DESCRIPTION. Small size species (length 3.5-4 mm); oblong, feebly convex, moderately shiny; head and pronotum pubescent, elytra nearly glabrous. Testaceous-reddish. Head quite pubescent; epistome gibbous, rather sparsely and finely punctured; clypeus broadly sinuate at middle, rounded at sides, thinly bordered, border very shortly bristled; genae obtusely rounded, shortly ciliate, more protruding than eyes; latter exceptionally large; frontal suture nearly faint. Pronotum transverse, subgranulosely punctured, punctures rather small, bean-shaped, umbilicate, piliferous; sides slightly rounded, shortly ciliate, obliquely truncate before hind angles; latter obtuse; base not bordered, quite shortly bristled, distinctly bisinuate. Scutellum very small, triangularly elongate. Elytra feebly shiny, with odd interstices sharply carinate, even interstices flat, smooth and alutaceous; striae wide, superficially punctured, not crenulate. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side coarsely, irregularly but rather densely punctured. Middle and hind tibiae slender and elongate, with nearly faint transverse carinae on outer face; apically fimbriate with stout and irregularly unequal spinules. Pygidium very shortly ciliate at apical margin. Sexual dimorphism shown in males by fore tibiae apical spur relatively stouter and by metasternal plate more strongly concave, coarsely and densely punctured. Aedeagus rather stout; paramera strongly acuminate and with few short apical bristles. Epipharynx transverse, front margin distinctly sinuate at middle, at sides subangularly broadened; epitorma regularly conical; corypha with two strong and elongate apical spiculae; pedia rather densely pubescent, with several elongate strong spines laterally subserially arranged; chaetopariae elongate and dense.

DISTRIBUTION. Northern Neotropical region.

Xenoheptaulacus tricostatus (Harold, 1869) (figs 927, 936-938)

Oxyomus tricostatus Harold, 1869a: 101; Blackwelder, 1944: 213

Xenoheptaulacus carinator Hinton, 1934: 614

Oxyomus carinator; Blackwelder, 1944: 213 (as synonym of *tricostatus*)

Xenoheptaulacus tricostatus; G. Dellacasa & Gordon, 1997: 375 (lectotype designation)

TYPE LOCALITY: Colombia.

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (lectotype female examined).

DESCRIPTION. Length 3.5-4 mm; oblong, feebly convex, moderately shiny; head and pronotum quite pubescent; apex of elytral carinae biserially shortly pubescent. Testaceous-reddish. Head with epistome gibbous, superficially and rather sparsely punctured; clypeus broadly sinuate at middle, rounded at sides; genae obtusely rounded, more protruding than eyes; frontal suture nearly obsolete, not at all tuberculate; front distinctly and densely punctured. Pronotum transverse, subgranulorugosely punctured; punctures rather small, bean-shaped, umbilicate, setigerous, setae backwardly recumbent; sides feebly rounded, thinly bordered, quite shortly ciliate, obliquely truncate before hind angles; latter obtuse; base not bordered, quite shortly bristled, bisinuate. Elytra feebly shiny; juxtasutural, relatively weaker, third and fifth interstices, shortened toward apex, and as well as seventh interstice, sharply carinate; vertex of carinae with extremely short, biseriate hairs; even interstices flat, smooth, alutaceous; striae wide, superficially punctured, not crenulate; epipleura flattened, irregularly and rather elongately ciliate. Hind tibiae superior apical spur shorter than first tarsal segment; latter nearly as long as following fourth combined. Male: fore tibiae apical spur relatively stouter and slightly curved downward; pronotum broadly transverse; metasternal plate concave and rather densely punctured. Female: fore tibiae apical spur slender and nearly straight; pronotum narrowed frontward; metasternal plate flat, with few very sparse punctures.

DISTRIBUTION. Panama, Colombia, Venezuela.

Genus *XEROPSAMOBEUS* Saylor, 1937

Xeropsamobeus Saylor, 1937: 36; G. Dellacasa & Gordon, 1994: 169

TYPE SPECIES: *Psammodius desertus* VanDyke, 1918 (original designation).

DESCRIPTION. Small size species (length 3.5-4 mm), oval-elongate, convex, strongly shiny, glabrous. Reddish-piceous, disc of pronotum dark piceous; elytra pale testaceous with brownish suture. Head with epistome gibbous, shortly transversely carinate, strongly confusedly granulo-rugosely punctured on disc; clypeus broadly sinuate at middle, subdentate at sides, lateral denticles distinctly upturned, sides straight or faintly curved, thinly bordered, border elongately bristled; genae obtuse, elongately ciliate; more protruding than eyes; latter rather small; frontal suture cariniform, feebly tuberculate. Pronotum transverse, shiny, convex, regularly, equally and largely punctured; sides widely rounded; hind angles widely rounded; base strongly bordered. Scutellum small, widely triangular, faintly punctured. Elytra elongate, strongly shiny; striae fine, superficial, feebly crenulate; interstices faintly convex, with a longitudinal median row of superficial punctures. Hind femora widely flattened, sparsely, superficially and irregularly punctured, many punctures with elongate yellowish setae. Fore tibiae distally tridentate and proximally faintly serrulate at outer margin; upper side smooth. Middle tibiae superior apical spur elongate, longer than inferior one and nearly as long as first two tarsal segments combined. Hind tibiae feebly widened toward apex; their apical spurs short, nearly leaf-shaped and of same length. Hind tarsi much shorter than tibiae; their segments triangularly widened; first segment slightly shorter than superior apical spur of tibiae and nearly as long as following two combined. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with spinules very short, stout,

rather of equal length. Pygidium subgranulose, finely, rather shortly and sparsely ciliate. Sexual dimorphism shown in males by coarser punctation of epistomal disc; by nearly straight clypeal sides; by pronotum relatively more transverse and by elytra nearly parallel-sided. Aedeagus with elongate paramera, in lateral view, distinctly hooked apically. Epipharynx broadly transverse, widely rounded at sides, distinctly sinuate at front margin; epitorma wide; corypha strongly protruding frontward with short spiculae rounded apically; pedia glabrous, with few strong spines; chaetopariae elongate, strong, not very densely arranged.

DISTRIBUTION. California

Xeropsamobeus desertus (VanDyke, 1918) (figs 928, 939-941)

Psammodytes desertus VanDyke, 1918: 10

Xeropsamobeus desertus; Saylor, 1937: 36; G. Dellacasa & Gordon, 1994: 171

TYPE LOCALITY: Imperial Valley, California [U. S. A.].

TYPE DEPOSITORY: Cincinnati Museum of Natural History. Cincinnati, OH (U.S.A.) (type not examined).

DESCRIPTION. Length 3.5-4 mm, oblong-oval, convex, strongly shiny, glabrous. Reddish-piceous; lateral tubercles of frontal suture and pronotum disc dark piceous; elytra pale testaceous with brownish suture; antennae brownish; legs reddish-testaceous. Head with epistome gibbous, shortly transversely subcarinate, coarsely, confusedly and granulorugosely punctured on disc, punctation distally more sparse and superficial; clypeus broadly sinuate at middle, subdenticulate at sides; genae ciliate, more protruding than eyes; frontal suture cariniform, more or less distinctly tuberculate; front sparsely punctured. Pronotum transverse, convex, distinctly but superficially microreticulate, shiny; largely, evenly and not very coarsely punctured, punctures faintly umbilicate; sides widely rounded, very thinly bordered, elongately ciliate; hind angles nearly obsolete; base thickly bordered. Scutellum wide, distinctly microreticulate, very sparsely and superficially punctured. Elytra convex, elongate, nearly parallel-sided, somewhat widened backward; striae fine, superficial, distinctly punctured, feebly crenulate; interstices slightly convex and with a median longitudinal row of rather large and superficial punctures. Superior apical spur of middle tibiae elongate, longer than inferior one and nearly as long as first two tarsal segments combined; latter nearly regularly shaped. Hind tibiae stout, rather feebly widened toward apex; apical spurs stout, widely flattened, nearly leaf shaped; superior one nearly as long as inferior. Hind tarsi short, about long as two thirds of tibial length only; their segments triangularly widened toward apex; first segment slightly shorter than superior apical spur of tibiae and nearly as long as following two combined. Male: epistome relatively less coarsely and more confusedly punctured on disc; clypeus with nearly straight sides; genae obtusely angulate; central tubercle of frontal suture distinct; pronotum relatively more transverse, less convex, more shiny, less coarsely and densely punctured on disc; elytra nearly parallel-sided. Female: epistome relatively more coarsely and rugosely punctured on disc; clypeus faintly arcuate at sides; genae subauriculate, widely rounded; central

tubercle of frontal suture nearly faint; pronotum more convex, less transverse, less shiny, more coarsely and densely punctured on disc; elytra slightly oval, somewhat widened posteriorly.

DISTRIBUTION. Southern California.

Genus *YOUNGAPHODIUS* Bordat, 1988 **stat. nov.**

Aphodius (*Youngaphodius*) Bordat, 1988: 63

TYPE SPECIES: *Aphodius agullasi* Endrödi, 1983 (original designation).

DESCRIPTION. Small size species (length 4-4.5 mm), oval-elongate, moderately convex, shiny; head and pronotum glabrous, elytra distinctly pubescent laterally and toward apex; all distal margins more or less elongately ciliate. Brown-yellowish. Head with epistome feebly gibbous, finely punctured; clypeus faintly prominent anteriorly, rounded at sides, latter sinuate before genae, finely bordered, border slightly thicker frontward, bristled; genae obtusely angulate, elongately ciliate, more protruding than eyes; latter medium sized; frontal suture fine, not tuberculate. Pronotum moderately transverse, doubly punctured, front margin not bordered; sides nearly straight, finely bordered, elongately and densely ciliate, cilia backward recumbent; hind angles obtusely rounded; base not bordered. Scutellum small, triangular. Elytra elongate, not denticulate at shoulder, punctato-striate; interstices feebly convex; epipleura elongately and densely ciliate, cilia backward recumbent. Protibiae distally tridentate and proximally finely serrulate at outer margin; upper side with few, large, coarse punctures irregularly sparse. Middle and hind tibiae with rather strong transverse carinae on outer face; apically fimbriate with elongate spinules progressively unequal. Pygidium with some apical setae. Sexual dimorphism shown in males by nearly flat epistome and by pronotum with larger lateral punctures relatively denser. Aedeagus with rather stout paramera, apically acuminate. Epipharynx transverse; anterior margin sinuate; epitorma narrow; corypha with one apical spicula only; pedia finely and densely pubescent with few stouter spines anteriorly mixed; chaetopariae slender and backwardly shortened.

DISTRIBUTION. Southern Afrotropical region.

Youngaphodius agullasi (Endrödi, 1983) **n. comb.** (figs 929, 942-944)

Aphodius (*Blackburneus*) *agullasi* Endrödi, 1983: 36

Aphodius (*Youngaphodius*) *agullasi*; Bordat, 1988: 63

TYPE LOCALITY: Cape Agulhas, South Africa.

TYPE DEPOSITORY: Transvaal Museum. Pretoria (holotype male examined).

DESCRIPTION. Length 4-4.5 mm, oval-elongate, moderately convex, shiny; nearly glabrous, elytra pubescent only laterally and toward apex; all distal margins more or less elongately and densely ciliate. Brown-yellowish; anterior margin and two more or less wide lateral spots of pronotum as well as elytral suture, dark brown. Head with epistome feebly gibbous, simply, regularly, very finely and sparsely punctured; clypeus faintly prominent anteriorly, rounded at sides; sides sinuate before genae; latter obtusely angulate, strongly more protruding than eyes; frontal suture finely impressed, not

tuberculate. Pronotum moderately transverse, doubly punctured; smaller punctures like those on head; rather larger ones laterally scattered; sides nearly straight, toward base slightly divergent, finely bordered and elongately, densely ciliate, cilia backward recumbent; hind angles rounded; base not bordered, quite shortly bristled. Scutellum nearly smooth, at base somewhat larger than first two elytral interstices. Elytra elongate, not denticulate at shoulder; finely striate; striae with small punctures, not crenulate; interstices feebly convex, finely and sparsely punctured, preapically sparsely and rather shortly pubescent; tenth interstice with feebly rough setigerous punctures; epipleura quite elongately densely ciliate, cilia slightly shortened near apex. Fore tibiae apical spur rather slender, feebly outward curved. Hind tibiae superior apical spur somewhat shorter than first tarsal segment; latter slightly longer than following three combined. Male: epistome nearly flat; larger lateral punctures of pronotum relatively denser. Female: epistome relatively more distinctly gibbous; larger lateral punctures of pronotum relatively sparser.

DISTRIBUTION. Extreme southern part of Austral Africa (Cape Agulhas sand dunes).

Part IV

TRIBE DIDACTYLIINI

DESCRIPTIONS OF GENERA AND RESPECTIVE TYPE SPECIES

(Genera in alphabetical order)

Genus *AIDOPHUS* Balthasar, 1963 **stat. nov.***Aphodius* (*Aidophus*) Balthasar, 1963: 278 (Aphodiini)TYPE SPECIES: *Aphodius paraguayanus* Balthasar, 1963 (original designation).

DESCRIPTION. Small size species (length 3-4 mm), elongate subcylindrical, convex, more or less shiny, glabrous. Pale brown-yellowish; epistome, pronotal and elytral disc darkened; seldom elytra with several elongate brownish spots. Head with epistome feebly gibbous, punctured, punctation frontward more or less distinctly granulose; clypeus distinctly sinuate at middle, rounded at sides, bordered, border glabrous; genae rounded, sparsely and elongately ciliate, more protruding than eyes; latter rather large; front usually more coarsely punctured than epistome. Pronotum transverse, doubly, more or less densely and irregularly punctured; sides rounded, thinly bordered, frontward elongately and sparsely ciliate; hind angles rounded; base thinly bordered. Scutellum small, rather narrow, with sides parallel toward base. Elytra elongate, nearly parallel-sided, not denticulate at shoulder, distinctly striate; striae superficially punctured, lateral ones joined one another apically; interstices nearly flat. Fore tibiae distally tridentate and proximally faintly serrulate at outer margin; upper side smooth. Middle tibiae with feeble transverse carinae on outer face. Hind tibiae with transverse carinae nearly faint and apically fimbriate with elongate and irregularly unequal spinules. Tarsi rather slender, longer than tibiae. Pygidium with some sparse, elongate and straight discal setae. Sexual dimorphism shown in males by fore tibiae apical spur flattened and truncate apically; punctation of epistome and of pronotum disc relatively sparser. Aedeagus with paramera short, apically curved. Epipharynx broadly transverse; anterior margin deeply sinuate at middle; epitorma nearly faint; corypha with short setae; pedia pubescent with mixed some strong spines more or less serially arranged; chaetopariae slender and dense.

DISTRIBUTION. Nearctic, Mexican Transition Zone and Neotropical region.

REMARKS. Balthasar (1963), in the original diagnosis of the genus, stated that some species assigned to *Didactylia* d'Orbigny (e.g. *infuscatopennis* A. Schmidt) could pertain to *Aidophus*. Furthermore *flaveolus* Harold, *kolbei* A. Schmidt, *notatus* Harold and *panamensis* Harold might be ascribed to *Aidophus*.

Aidophus paraguayanus (Balthasar, 1963) **n. comb.** (figs 945, 949-951)*Aphodius* (*Aidophus*) *paraguayanus* Balthasar, 1963: 279

TYPE LOCALITY: Umgebung von Villarrica, Paraguay.

TYPE DEPOSITORY: Martin Luther Universität, Halle-Wittenberg. Halle (holotype male examined).

DESCRIPTION. Length 3-4 mm, elongate, subcylindrical, moderately convex, shiny, glabrous. Pale brown-yellowish; front and pronotum disc darker, latter with two lateral rounded spots brownish; elytra brown-reddish with suture and a cloudy, wide and elongate discal spot, brownish. Head with epistome feebly gibbous, sparsely and superficially punctured, punctation subgranulose frontward; clypeus distinctly sinuate at middle, widely rounded at sides; genae rounded, feebly more protruding than eyes; frontal suture finely impressed only laterally; front relatively more distinctly punctured than epistome. Pronotum transverse, doubly punctured, larger punctures irregularly scattered; sides rounded, thinly bordered, border with few elongate setae toward front angles; hind angles rounded; base thinly bordered. Scutellum elongate, depressed basally at middle, rounded apically. Elytra elongate, parallel-sided, rather deeply striate; striae superficially punctured, subcrenulate; interstices nearly flat, superficially microreticulate, sparsely and irregularly punctured. Hind tibiae superior apical spur shorter than first tarsal segment; latter longer than following two combined. Male: fore tibiae apical spur flattened and truncate apically, their distal outer teeth relatively stronger; head and pronotal disc more sparsely punctured. Female: fore tibiae apical spur regularly acuminate toward apex, their distal outer teeth relatively smaller; head and pronotal disc more densely punctured.

DISTRIBUTION. Paraguay.

Genus *AUSTRALAPHODIUS* Balthasar, 1942

Aphodius (*Australaphodius*) Balthasar, 1942: 203

Australaphodius; Bordat, 1990a: 315

TYPE SPECIES: *Aphodius melbournicus* Balthasar, 1942 (junior synonym of *Aphodius frenchi* Blackburn, 1892) (monotypy).

DESCRIPTION. Small size species (length 3-4 mm), elongate, convex, shiny, glabrous. Brown-blackish, sometimes elytra brown-reddish. Head narrowed frontward; epistome gibbous, punctured, anteriorly with or without transverse carina; clypeus sinuate at middle, rounded at sides, finely bordered, border glabrous; genae obtusely rounded, ciliate, more protruding than eyes; latter small; frontal suture distinct, sometimes tuberculate at middle. Pronotum transverse, the greatest width at middle, simply punctured; sides feebly curved, thickly bordered; hind angles rounded; base bordered. Scutellum small, narrowly triangular. Elytra rather broad, not denticulate at shoulder, striato-punctate; first stria as wide as second apically; lateral striae joined one another preapically. Fore tibiae distally tridentate and proximally not serrulate at outer margin; upper side sparsely but coarsely punctured. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with elongate spinules alternately unequal. Abdominal sternites joined one another but their sutural margins distinct at middle. Pygidium with some sparse and straight setae. Sexual dimorphism shown in males by fore tibiae apical spur sinuate before apex and abruptly downward bent; first segment of middle tarsi with a small inferior apical spinula at inner margin; first segment of hind tarsi with two small inferior apical spinules at inner margin. Aedeagus with tegmen feebly convex and parallel-sided; paramera straight, acute apically and plumped basally.

Epipharynx transverse; anterior margin sinuate at each side; epitorma widely triangular; corypha with several apical spiculae; pedia with a row of stout chaetae parallel to chaetopariae; latter relatively more elongate; nesium broad.

DISTRIBUTION. Southern Afrotropical, Australian, Neotropical and Nearctic region.

Australaphodius frenchi (Blackburn, 1892) (figs 946, 952-954)

Aphodius frenchi Blackburn, 1892: 35

Aphodius (*Phaeaphodius*) *frenchi*; A. Schmidt, 1922: 211

Aphodius (*Australaphodius*) *melbournicus* Balthasar, 1942: 203

Australaphodius frenchi; Bordat, 1990a: 315

TYPE LOCALITY: S. Australia.

TYPE DEPOSITORY: Natural History Museum. London (holotype male examined).

DESCRIPTION. Length 3-4 mm, elongate, convex, shiny, glabrous. Black, lateral margins of pronotum and sometimes elytra brown-reddish. Head with epistome gibbous, anteriorly with a more or less distinct transverse carina, simply and finely punctured; punctation nearly regular and throughout scattered; clypeus distinctly sinuate at middle, widely rounded at sides; genae obtusely angulose, more protruding than eyes; frontal suture feebly raised, bituberculate at middle; front relatively more coarsely punctured. Pronotum moderately transverse, simply punctured; punctation like that on head but finer anteriorly on disc and toward sides; latter feebly rounded and thickly bordered; border with some sparse and rather elongate cilia, more dense near front angles; hind angles obtusely rounded; base distinctly bordered. Elytra not denticulate at shoulder, deeply striate; striae distinctly crenulate; interstices feebly convex, finely and sparsely punctured. Abdominal sternites glabrous, more densely punctured laterally than at middle; apical sternite with four or six large setigerous punctures. Pygidium finely punctured with some sparse, elongate and straight setae. Male: fore tibiae apical spur abruptly downward bent; first segment of middle tarsi with one inferior apical spinula at inner margin; first segment of hind tarsi with two inferior apical spinulae at inner margin; hind tibiae superior apical spur as long as first tarsal segment; latter as long as following three combined. Female: fore tibiae apical spur nearly straight; first segment of middle and hind tarsi without apical spinulae; hind tibiae superior apical spur longer than first tarsal segment; latter only slightly longer than following two combined.

DISTRIBUTION. South Africa, Australia, Tasmania, Chile, California.

Genus *COPTOCHIRUS* Harold, 1859

Coptochirus Harold, 1859: 202

TYPE SPECIES: *Coptochirus pteropus* Harold, 1859 (monotypy).

DESCRIPTION. Small or medium size species (length 4-6 mm), elongate, moderately convex, sericeous; glabrous, elytra pubescent. Head and pronotum brown-blackish; elytra brown-yellowish with or without darker spots. Head with epistome feebly gibbous, punctured; clypeus sinuate at middle, angulately rounded at sides, rounded anterior angles more or less distinctly upturned, not ciliate; genae angulate, ciliate, more

protruding than eyes; latter rather small; frontal suture not tuberculate. Pronotum moderately transverse, greater width at middle, punctured; sides feebly curved; lateral margins thinly bordered, elongately ciliate; base more or less distinctly bordered. Scutellum small, triangular. Elytra distinctly callose preapically, not denticulate at shoulder, striato-punctate; seventh and eighth stria joined each other before humeral callus. Abdominal sternites joined one another but their sutural margins very distinct; each sternite with a transverse row of pale setae. Pygidium with some elongate, straight setae, sparse on disc and at apical margin. Fore tibiae proximally not serrulate at outer margin; upper side smooth and finely microreticulate. Middle and hind tibiae with distinct transverse carinae on outer face; apically fimbriate with elongate spinules alternately unequal. Sexual dimorphism shown in males by anterior angles of clypeus more strongly raised, sometimes lobate; epistome and pronotum relatively more finely punctured; fore tibiae without apical spur, bidentate at outer margin, distal tooth widened apically; inner margin angulate at level of sinuosity between the two outer distal teeth. Aedeagus with paramera stout, more or less elongate; tegmen with transversal impression on basal third. Epipharynx strongly transverse; epitorma widely triangular; corypha with four stout apical spiculae; paria pubescent with some stout spines antero-laterally mixed; chaetopariae slender and elongate; nesium broad.

DISTRIBUTION. Southern Afrotropical region.

Coptochirus pteropus Harold, 1859 (figs 947, 955-957)

Coptochirus pteropus Harold, 1859: 202

TYPE LOCALITY: "Cap der guten Hoffnung" [Cape of Good Hope; South Africa].

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (lectotype male examined).

DESCRIPTION. Length 4.5-5 mm, elongate, moderately convex, feebly shiny; head and pronotum glabrous, elytra pubescent. Head and pronotum brown-blackish, clypeus and lateral margins of pronotum more or less widely brown-yellowish; scutellum, narrowly blackish at sides; elytra yellowish. Head with epistome feebly gibbous, simply, almost regularly, finely and rather sparsely punctured; clypeus narrowly sinuate at middle, nearly lobate at sides; genae rectangularly angulate but angle distally rounded, more protruding than eyes; frontal suture finely impressed, not tuberculate; front relatively more coarsely punctured. Pronotum narrower than elytra, doubly punctured; small punctures like those on head; large punctures, three to four times larger than small punctures, irregularly and less dense on disc; sides thickly bordered and elongately ciliate; hind angles obtusely rounded; base rather finely bordered. Scutellum sunk on disc, impunctate. Elytra relatively more strongly microreticulate; striae fine, feebly deep, distinctly crenulate; interstices convex, near striae with irregular longitudinal rows of punctures, laterally and toward apex distinctly setigerous; setae straight and rather short, more dense on sides and toward apex. Male: epistome relatively more sparsely punctured; anterior angles of clypeus stronger and distinctly upturned; larger punctures of pronotal punctation lacking on disc, its hind angles nearly quite rounded; fore tibiae without apical spur, bidentate at outer margin and angulate at inner margin; first

segment of hind tarsi strongly widened at each side, spatulate, longer than superior apical spur of tibiae as well as following three combined. Female: epistome relatively more densely punctured; anterior angles of clypeus nearly regularly rounded, feebly upturned; larger punctures of pronotal punctation throughout scattered, somewhat confluent toward base; hind angles strongly sinuate; fore tibiae with apical spur and tridentate at outer margin; first segment of hind tarsi normally shaped, shorter than superior apical spur of tibiae and as long as following two combined.

DISTRIBUTION. South Africa (Cape Province).

REMARKS. The **lectotype male, herein designated**, bears the following labels:

- 1) white, handwritten by Harold: Type;
- 2) white, printed: Ex-Musaeo Harold;
- 3) blue, printed: Mus. Paris, ex coll. Oberthür;
- 4) red, handwritten: *Coptochirus pteropus* Harold, 1859, lectotype, P. Bordat & G. Dellacasa des., 1996.

Genus *DIDACTYLIA* d'Orbigny, 1896

Didactylia d'Orbigny, 1896a: 247; Paulian, 1942: 119 (Eupariina); Balthasar, 1945: 114 (Aphodiini); Pittino, 1984: 309 (Didactyliina); M. Dellacasa, 1988a: 121 (Didactyliini)

Glaraphodius Balthasar, 1941c: 150 (n. syn.)

Nataia Endrödi, 1961: 338 (**n. syn.**)

TYPE SPECIES: *Aphodius pallicolor* Fairmaire, 1886 (monotypy).

DESCRIPTION. Small size species (length 3-5 mm), elongate, moderately convex, feebly shiny; glabrous, elytra pubescent laterally and toward apex. Yellowish; head, pronotum and sometimes elytral spots darker. Head with epistome feebly gibbous, punctured; clypeus quite rounded or faintly sinuate at middle, bordered, border glabrous; genae small, not ciliate, not or feebly more protruding than eyes; latter large; frontal suture not tuberculate. Pronotum moderately transverse, greater width at middle or at anterior third; punctured; sides curved and elongately ciliate; base bordered or not. Scutellum small, triangular, at base narrower than first two elytral interstices, apically acuminate. Elytra not denticulate at shoulder; punctato-striate; ninth stria not joined with tenth before humeral callus. Fore tibiae with apical spur in both sexes, distally bidentate or tridentate and proximally not serrulate at outer margin; upper side with few, large and coarse punctures irregularly sparse. Middle tibiae with more or less strong transverse carinae on outer face. Hind tibiae with nearly faint transverse carinae on outer face; apically fimbriate with stout and irregularly unequal spinules. Middle and hind tarsi longer than tibiae. Abdominal sternites joined one another. Pygidium with sparse and straight setae. Sexual dimorphism shown in males by wider head; by fore tibiae sometimes bidentate at outer margin, their distal teeth relatively more strong, with apical spur downward bent and basally denticulate at inner side. Aedeagus with short paramera, curved apically. Epipharynx broadly transverse; anterior margin deeply and widely sinuate at middle; epitorma faint; corypha with two apical spiculae; pedia shortly and densely pubescent with stronger and rather elongate spines antero-laterally mixed; chaetopariae slender, densely arranged; nesium strongly broadened.

DISTRIBUTION. Southern Palearctic and Afrotropical region, Madagascar.

REMARKS. Morpho-anatomical features of *Glaraphodius somalicus* Balthasar, 1941 and *Nataia szunyoghyi* Endrödi, 1961, type species of respective genera, allow to establish the new synonymies versus *Didactylia* at genus-group level even though some slight differences in the epipharynx may be remarked.

Didactylia pallicolor (Fairmaire, 1886) (figs 948, 962-964)

Aphodius pallicolor Fairmaire, 1886: 442

Didactylia pallicolor; d'Orbigny, 1896a: 248

TYPE LOCALITY: Harkeko, Obock [Djibouti].

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (lectotype male examined).

DESCRIPTION. Length 3-4 mm, elongate, feebly convex, sericeous; glabrous with elytra laterally and apically pubescent. Diaphanous pale testaceous. Head with epistome feebly convex, simply, almost regularly, finely and sparsely punctured; clypeus either faintly or not sinuate at middle, widely rounded at sides, margin upturned; genae rectangular but distal angle rounded, slightly more protruding than eyes; frontal suture nearly faint. Pronotum with superficial and narrow longitudinal groove at middle of basal half; doubly punctured; small punctures like those on head and throughout scattered; large punctures, four to six times larger than smaller, irregular, sparse and arranged on sides of disc only; lateral margins thickly bordered, elongately and straightly ciliate; hind angles rounded and, as well as base, finely bordered. Scutellum smooth, somewhat sunk on disc. Elytra with striae fine and superficial, their punctures nearly faint; interstices feebly convex, more strongly microreticulate than head and pronotum, finely and sparsely punctured; tenth interstice with longitudinal row of short setae, ninth interstice pubescent only on distal quarter; other interstices narrowly pubescent preapically only; epipleura elongately ciliate. Fore tibiae tridentate at outer margin, proximal tooth smaller. First segment of hind tarsi shorter than following two combined. Abdominal sternites shiny, with a transverse belt of rough setigerous punctures; grooved distal suture of each sternite discally shallow. Male: head relatively more wide; epistome less densely punctured; clypeus nearly rounded anteriorly; fore tibiae apical spur downward bent and basally inward denticulate. Female: head relatively narrower; epistome frontward more densely punctured; clypeus generally feebly sinuate at middle; fore tibiae apical spur regularly curved outward and apically acuminate.

DISTRIBUTION. The species is known only from Djibouti and recorded from Somaliland by Endrödi (1964).

Genus *DREPANOCANTHUS* Péringuey, 1901

Drepanocanthus Péringuey, 1901: 431; Paulian, 1942: 99

Drepanocanthus (*Drepanocanthus*); Bordat, 1993: 374

TYPE SPECIES: *Aphodius lineatus* Wiedemann, 1823 (subsequent designation: Paulian, 1942).

DESCRIPTION. Rather small size species (length 4-6 mm), elongate, moderately convex, more or less shiny and more or less diffusedly and finely pubescent. Head and pronotum brown-blackish, elytra brownish. Head with epistome gibbous, roughly punctate; clypeus sinuate at middle, rounded at sides, margin glabrous; genae obtusely rounded, ciliate, more protruding than eyes; latter rather small; frontal suture finely impressed, not tuberculate. Pronotum transverse, foveolate on each side and with median longitudinal groove toward base; simply punctured; sides and base very shortly bristled; basal margin rather faintly bordered. Scutellum small, triangular, with curved sides, longitudinally carinate at middle. Elytra not denticulate at shoulder; at base with ten wide striae limited at each side by a row of distinct and rough punctures; even interstices flat; odd ones carinate at middle; epipleura large, distinct up to apex. Fore tibiae with apical spur in both sexes; distally tridentate and proximally not serrulate at outer margin; upper side with few, coarse but irregularly sparse punctures. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with alternately unequal spinules. Abdominal sternites joined one another but their sutural margins distinct. Pygidium with some sparse, elongate and straight setae. Sexual dimorphism shown in males by shiny pronotum; by fore tibiae apical spur hooked apically; by first segment of middle tarsi apically inward denticulate; by first segment of hind tarsi inward strongly curved and obliquely truncate apically. Aedeagus with elongate paramera, progressively curved from base up to acute apex. Epipharynx with anterior margin sinuate at each side; epitorma drop-shaped; corypha with two larger and four smaller apical spiculae; pedia pubescent with a row of stronger chaetae parallel to chaetopariae; latter relatively more slender; nesium strongly transverse; tormae rather short.

DISTRIBUTION. Southern Afrotropical region.

Drepanocanthus lineatus (Wiedemann, 1823) (figs 958, 965-967)

Aphodius lineatus Wiedemann, 1823: 28

Harmogaster lineata; Harold in Gemminger & Harold, 1869c: 1064

Drepanocanthus lineatus; A. Schmidt in Wytsman, 1910a: 100

Drepanocanthus (*Drepanocanthus*) *lineatus*; Bordat, 1993: 374 (lectotype designation)

TYPE LOCALITY: "Prom. bon. sp." [Cape of Good Hope; South Africa].

TYPE DEPOSITORY: Zoologisk Museum, Universitets København. Copenhagen (lectotype male examined).

DESCRIPTION. Length 4-5.5 mm, elongate, moderately convex, shiny, nearly quite pubescent. Brown-blackish, lateral margin of pronotum and elytra pale brown; legs testaceous. Head with epistome gibbous, densely, regularly and simply punctured; punctures rough and usually shortly setigerous; clypeus sinuate at middle, widely rounded at sides, genae obtusely rounded, more protruding than eyes; frontal suture finely impressed. Pronotum transverse, feebly narrowed toward base; simply punctured; larger and shortly setigerous punctures, regularly, densely and throughout scattered; punctation somewhat coarser and denser toward sides; latter curved and shortly bristled as well as hind angles. Scutellum longitudinally carinate at middle. Elytra with ten wide striae, larger than even interstices; latter with a median longitudinal row of small, shortly

setigerous granules; odd interstices carinate at middle and, at each side, with row of granules like those on even interstices; bottom of striae with sculpture identical to that of even interstices; each stria bordered at each side by a longitudinal row of punctures distinctly crenulating its bottom as well as margin of contiguous interstice. Male: pronotum shiny; fore tibiae apical spur hooked apically; first segment of middle tarsi apically denticulate; first segment of hind tarsi inward strongly curved and obliquely truncate apically, longer than following three combined. Female: pronotum sericeous; first segment of middle and hind tarsi normally shaped; superior apical spur of hind tibiae longer than first tarsal segment; latter longer than following two combined.

DISTRIBUTION. South Africa (Cape Town, Cape of Good Hope).

Genus *GOIGINUS* Endrödi, 1982

Goiginus Endrödi, 1982: 314

TYPE SPECIES: *Goiginus howdeni* Endrödi, 1982 (original designation).

DESCRIPTION. Small size species (length 3.5-4 mm), elongate, moderately convex, shiny, glabrous. Brown-yellowish. Head with epistome flat, abruptly frontwardly inclinate, punctured toward frontal suture only; clypeus deeply sinuate at middle and strongly lobate at sides, lateral margins thinly bordered, border glabrous; genae large, auriculate, obtusely rounded, very shortly bristled, strongly more protruding than eyes; genal sutures distinctly raised; eyes rather large; frontal suture finely impressed, not at all tuberculate; front anteriorly regularly punctured, proximally smooth. Pronotum transverse, doubly and irregularly punctured; sides widely rounded and thickly bordered, border glabrous; hind angles obtusely rounded; base thinly bordered. Scutellum small, triangular, somewhat narrowed toward base. Elytra elongate, not denticulate at shoulder, each elytron with ten striae subcrenulate punctured; even interstices wide and flat; odd interstices strongly narrower and distinctly convex, ninth and juxtasutural ones more raised and apically joined each other. Abdominal sternites joined one another but with very distinct sutural margins. Fore tibiae proximally not serrulate at outer margin, upper side sparsely punctured and with a regular longitudinal row of shortly setigerous punctures at middle. Middle and hind tibiae with distinct transverse carinae on outer face, apically fimbriate with elongate spinules alternately unequal. Pygidium with some pale setae on apical quarter. Though females are unknown it may be reasonable to suppose that sexual dimorphism could be shown in males mainly by shape of fore tibiae lacking of apical spur too. Aedeagus with rather stout paramera rounded apically. Epipharynx transverse with fore margin slightly bisinuate at each side; epitorma widely campaniform; corypha with four apical spiculae; paria pubescent with few strong spines mixed; chaetopariae slender and rather elongate.

DISTRIBUTION. Southern Afrotropical region.

Goiginus howdeni Endrödi, 1982 (figs 959, 968-970)

Goiginus howdeni Endrödi, 1982: 314

TYPE LOCALITY: Cathedral Peaks For. St., 75 km WSW Estcourt; Natal [South Africa].

TYPE DEPOSITORY: Transvaal Museum. Pretoria (holotype male examined).

DESCRIPTION. Length 3.5-4 mm, elongate, moderately convex, shiny, glabrous. Dark brown-yellowish; clypeal margin and front angles of pronotum paler; legs yellowish; antennal club brownish. Head with epistome flat, abruptly inclinate and somewhat depressed frontwardly, smooth distally, superficially microreticulate and sparsely punctured toward frontal suture; clypeus deeply and angulately sinuate at middle, strongly obliquely lobate at sides, lobes distinctly upturned, lateral margins inwardly sinuate; genae very large, distinctly auriculate, obtusely rounded, with extremely short and sparse bristles, strongly more protruding than eyes; genal sutures distinctly raised; frontal suture finely impressed at middle, slightly raised laterally, not at all tuberculate; front regularly and rather coarsely punctured toward frontal suture but widely smooth proximally. Pronotum transverse, moderately and regularly convex; doubly punctured, small punctures very fine and throughout regularly scattered; large punctures, ten times larger than small punctures, umbilicate, irregularly sparse on disc, somewhat denser laterally and basally but the lateral callosities smooth; sides widely rounded, feebly inward sinuate before hind angles, thickly bordered, border glabrous; hind angles obtusely rounded; base slightly bisinuate and thinly bordered. Scutellum somewhat depressed at middle, distinctly microreticulate, impunctate. Elytra elongate, moderately convex, not denticulate at shoulder, nearly parallel-sided; deeply striate; striae enough sparsely punctured, subcrenulate; even interstices wide, flat on disc and feebly convex apically, near imperceptibly and sparsely punctulate; odd interstices strongly narrower, distinctly convex, more convex toward apex, subcarinate at middle and with a central longitudinal row of fine punctures; ninth and juxtasutural ones relatively more distinctly raised and joined each other apically, fourth distinctly shortened. Hind tibiae superior apical spur nearly as long as first tarsal segment; latter shorter than following three combined. Male: fore tibiae without apical spur, bidentate at outer margin, the distal outer tooth widened, truncate apically and inwardly denticulate near tarsal insertion. Female unknown.

DISTRIBUTION. The species is so far known from type locality only.

REMARKS. Petrovitz (1967) described *Coptochirus zumpti* from "Giant Castle, Drakensberg, Natal", that is very near to type locality of *Goiginus howdeni*.

We have studied the holotype and two paratypes, all male specimens, of *Coptochirus zumpti* preserved in Basel Naturhistorisches Museum and, even if some significant taxonomical differences allow to consider it a good species, the complex of systematic characteristics bears to formulate the **new combination**: *Goiginus zumpti* (Petrovitz, 1967).

Genus *HARMOGASTER* Harold, 1861

Harmogaster Harold, 1861: 112

Odontaphodius A. Schmidt, 1907a: 249; A. Schmidt, 1911a: 49 (as synonym of *Harmogaster*)

TYPE SPECIES: *Harmogaster exarata* Harold, 1861 (monotypy).

DESCRIPTION. Small or medium size species (length 4-7 mm), elongate, strongly convex,

shiny, glabrous. Brown-blackish; clypeus and front angles of pronotum shadowy reddish. Head with epistome distinctly gibbous, variously punctured and with anterior, more or less distinct transverse carina; clypeus sinuate at middle, either rounded or denticulate at sides, finely bordered, border at least anteriorly glabrous; genae obtusely rounded, ciliate, more protruding than eyes; latter small; frontal suture finely impressed, feebly tuberculate at middle or mutic. Pronotum feebly transverse, doubly punctured; sides thinly bordered; hind angles obliquely truncate; base thinly bordered. Scutellum small, triangular, at base wider than first two elytral interstices. Elytra basally with ten wide striae variously sculptured, bordered at each side by a supplementary fine punctured striola making elytra apparently with twenty striae; interstices convex, generally as wide as striae; plica epipleurali rather wide. Fore tibiae distally tridentate and proximally not serrulate at outer margin, inferior carina with two distinct denticles; upper side with few, large and irregularly sparse punctures. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with elongate and alternately unequal spinules, their apical spurs very close each other. First segment of hind tarsi shorter than superior apical spur of tibiae. Abdominal sternites joined one another but their sutural margins very distinct and deep. Pygidium quite covered by elytra, with some straight setae on disc and apically. Sexual dimorphism shown in males by relatively more strongly convex pronotum; by fore tibiae apical spur inward sinuate and hooked apically, denticles of their inferior carina stronger; by first segment of middle and hind tarsi with an inferior apical spinula. Aedeagus with more or less elongate paramera, apically acuminate. Epipharynx widely transverse; epitorma broad; corypha sharply cariniform with two stout apical spiculae; pedia antero-medially finely pubescent and with a row of stouter spines parallel to chaetopariae; latter relatively more slender; nesium very wide; tormae short.

DISTRIBUTION. Southern Afrotropical region.

REMARKS. To *Harmogaster* are ascribed all taxa with elytra apparently twenty-striate. Nevertheless, Bordat (1993) established that someone of them pertains to *Pseudoxymus* Petrovitz. Stebnicka & Howden (1995: 756) recorded only one species from Australia: *Harmogaster geminata* A. Schmidt, but this taxon must be considered pertaining to *Pseudoxymus* (Bordat, 1993), therefore the latter is the Australian genus instead of *Harmogaster*.

Harmogaster exarata Harold, 1861 (figs 960, 971-973)

Harmogaster exarata Harold, 1861: 113

TYPE LOCALITY: "Cap der guten Hoffnung" [Cape of Good Hope; South Africa].

TYPE DEPOSITORY: unknown to authors.

DESCRIPTION. Length 4-6 mm, elongate, strongly convex, shiny, glabrous. Brown-blackish; clypeus, anterior angles of pronotum and sometimes elytra paler. Head with epistome gibbous, with strong anterior transverse carina, simply, almost regularly, rather coarsely and densely punctured; anteriorly and on disc punctation finer and sparser, more dense and subrugose at sides; clypeus distinctly sinuate at middle, widely rounded

at sides; genae obtusely rounded, more protruding than eyes; frontal suture finely impressed and feebly tuberculate at middle. Pronotum feebly transverse, doubly punctured; fine and sparse small punctures throughout scattered; large punctures, five to ten times larger than small punctures, very sparse on disc, somewhat denser toward base and on sides; latter feebly rounded; lateral margins obstructed by strong median callus. Scutellum microreticulate, with a more or less distinct longitudinal median carina. Elytra with striae of the same shape of interstices but less raised and only slightly narrower, bordered at each side by strongly punctured striola; interstices feebly convex, more distinctly convex toward apex, finely and sparsely punctured. Hind tibiae superior apical spur distinctly longer than first tarsal segment; latter slightly longer than second only. Male: punctation of head and pronotum relative less dense; latter more strongly convex; fore tibiae apical spur inward hooked apically, denticles of their inferior carina stronger; first segment of middle and hind tarsi inferiorly subdenticulate apically. Female: punctation of head and pronotum relatively denser; latter less convex; fore tibiae apical spur straight, denticles of their inferior carina weaker; first segment of middle and hind tarsi inferiorly not denticulate apically.

DISTRIBUTION. South Africa (Cape Province).

Genus *PROCTOPHANES* Harold, 1861

Proctophanes Harold, 1861: 111

Proctammodes Blackburn, 1892: 37 (*nomen novum innecessum?*)

TYPE SPECIES: *Aphodius sculptus* Hope, 1847 (monotypy).

DESCRIPTION. Small or medium size species (length 5-6.5 mm), stout, strongly convex, shiny, glabrous. Brown-blackish. Head with epistome distinctly gibbous, with anterior transverse carina, punctured; clypeus sinuate at middle, rounded at sides, finely bordered, border glabrous; genae rounded, not ciliate, feebly more protruding than eyes; latter rather small; frontal suture trituberculate. Pronotum feebly transverse, the greatest width at base, coarsely punctured, with median longitudinal groove toward base, not bordered at front margin; hind angles obtusely rounded; base not bordered. Scutellum small, triangular. Elytra not denticulate at shoulder, with ten wide and strongly punctured striae; punctures deep and transverse. Fore tibiae distally tridentate and proximally not serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with short and equal spinules. Apical spur of hind tibiae very close each other, inserted near inner margin. Abdominal sternites joined one another, rugosely punctured, their apical sutural margins distinct. Pygidium entirely exposed, glabrous, abruptly downward bent. Sexual dimorphism shown in males by median tubercle of frontal suture relatively stronger, lateral ones distinct also. Aedeagus with tegmen broad, subparallel-sided; paramera apically curved. Epipharynx transverse; anterior margin sinuate at each side; epitorma, in lateral view, strongly and sharply cariniform toward fore margin; corypha sharply, strongly protruding beyond anterior margin and with two small apical spiculae; pedia pubescent with some stout and sparse spines forming also a row parallel to chaetopariae; latter rather stout and densely arranged; nesium transverse.

DISTRIBUTION. Australian region.

REMARKS. The new name *Proctammodes* was proposed by Blackburn (1892) who, perhaps incorrectly, considered *Proctophanes* Harold, 1861 homonym of *Proctophana* Lecordaire, 1848 (Coleoptera Chrysomelidae). Nevertheless this nomenclatural act seems not having been accepted by any of the subsequent authors.

Proctophanes sculptus (Hope, 1847) (figs 961, 974-976)

Aphodius sculptus Hope, 1847: 285

Proctophanes sculptus; Harold, 1861: 111; Stebnicka & Howden, 1995: 744 (lectotype designation)

TYPE LOCALITY: Port Phillip [Victoria, Australia].

TYPE DEPOSITORY: Hope Department of Entomology, Oxford University. Oxford (lectotype female not examined).

DESCRIPTION. Length 5-6 mm, stout, strongly convex, glabrous; shiny but elytral striae microreticulate at bottom so rather dull. Brown-blackish. Head with epistome gibbous, anteriorly with transverse carina, rather irregularly punctured, punctures with one to three times variable diameter, punctation rather dense and subrugose on disc, fine and sparser frontward beyond transverse carina; clypeus rather deeply sinuate at middle, widely rounded at sides; genae obtusely rounded, feebly more protruding than eyes; frontal suture raised and with a transverse median tubercle, lateral ones weaker or nearly faint. Pronotum feebly transverse, toward base with narrow and superficial median longitudinal groove; finely bordered at front margin; doubly punctured; very fine and sparse small punctures scattered throughout; large punctures, eight to ten times larger than small punctures, irregular, rather dense and coarser at bottom of median groove but lacking on lateral callus; latter obtecting thinly bordered and sparsely ciliate lateral margins; hind angles rounded; basal margin obtusely angulose, rounded at scutellum level, not bordered. Scutellum rather densely punctured on basal third. Elytra with ten wide striae, their transverse punctures shaped like short deep transverse striolae crenulating contiguous interstices more strongly at inner than at outer margin; ninth stria as long as eighth, not reaching tenth before humeral callus; interstices feebly convex, finely and sparsely punctured, sixth and eighth ones shortened preapically. Fore tibiae apical spur regularly acuminate up to apex. Hind tibiae superior apical spur as long as first tarsal segment; latter slightly longer than following two combined. Male: median tubercle of frontal suture relatively stronger, bifid at tip; lateral ones weaker but distinct. Female: median tubercle of frontal suture relatively weaker; lateral ones nearly faint.

DISTRIBUTION. Southern Australia (Australian Capital Territory, New South Wales, Queensland, Victoria) and Tasmania.

Genus *PSEUDODREPANOCANTHUS* Bordat, 1993 **stat. nov.**

Drepanocanthus (*Pseudodrepanocanthus*) Bordat, 1993: 378

TYPE SPECIES: *Harmogaster nasuta* Harold, 1869 (original designation).

DESCRIPTION. Small size species (length 3-4.5 mm), elongate, moderately convex, more

or less shiny, glabrous. Entirely dark brownish or head and pronotum dark brownish and elytra yellowish. Head with epistome gibbous, either simply or partly granulosely punctured; clypeus sinuate at middle, more or less widely rounded at sides, not ciliate; genae obtusely angulate, elongately ciliate, more protruding than eyes; latter rather small; frontal suture faintly impressed, not tuberculate. Pronotum transverse; more or less distinctly foveolate at sides and with median longitudinal superficial or faint groove; densely punctured, punctures elliptical; hind angles rounded; base bordered. Scutellum elongately triangular with curved sides and apically rounded. Elytra not denticulate at shoulder, with striae wide and limited at each side by a row of distinct punctures; interstices cariniform; epipleura wide, reaching apex. Fore tibiae with apical spur in both sexes, distally tridentate and proximally not serrulate at outer margin; upper side with few, large punctures irregularly sparse. Middle and hind tibiae with strong transverse carinae on outer face, apically fimbriate with elongate spinules alternately unequal. Abdominal sternites joined one another but their sutural margins distinct. Pygidium with some sparse and straight setae. Sexual dimorphism shown in males by shiny pronotum; by fore tibiae apical spur downward bent; by first segment of middle and hind tarsi apically inward spinulose. Aedeagus with elongate paramera curved upward and acuminate apically. Epipharynx with anterior margin sinuate at each side; epitorma drop-shaped; corypha with two large and four smaller apical spiculae; pedia pubescent with row of stouter spines parallel to chaetopariae; latter shorter than spines of pedia; nesium widely transverse; tormae rather short.

DISTRIBUTION. Southern Afrotropical region.

Pseudodrepanocanthus nasutus (Harold, 1869) **n. comb.** (figs 977-979, 982)

Harmogaster nasuta Harold, 1869a: 101

Drepanocanthus nasutus; A. Schmidt in Wytsman, 1910b: 100

Drepanocanthus (*Pseudodrepanocanthus*) *nasutus*; Bordat, 1993: 379 (lectotype designation)

TYPE LOCALITY: "Afr. australis, Xobar" [South Africa].

TYPE DEPOSITORY: Muséum national d'Histoire naturelle. Paris (lectotype male examined).

DESCRIPTION. Length 4-4.5 mm, elongate, moderately convex, feebly shiny, glabrous. Head and pronotum piceous, clypeus and lateral margins of pronotum testaceous, scutellum and elytra brown-yellowish; latter with brown-blackish suture. Head with epistome gibbous, finely, regularly and sparsely punctured; punctation somewhat finer on disc and faintly rugose toward sides; clypeus sinuate at middle, rounded at sides; genae obtuse, more protruding than eyes; frontal suture finely impressed, not tuberculate. Pronotum transverse, with a rounded distinct foveola behind anterior angles, another superficial near hind angles and another one on each side of disc, latter sometimes faint; rather coarsely elliptically punctured; punctation dense and regular on disc, punctures laterally more elongate and denser. Scutellum microreticulate, sunk at middle. Elytra with striae wide as interstices, microreticulate at bottom so dull, strongly crenulate; interstices carinate at middle, more strongly convex toward apex; fourth, fifth, eighth and tenth apically shortened. Male: anterior angles of clypeus obtusely rounded and upturned;

pronotum shiny, relatively less densely punctured; fore tibiae feebly inward dilatate apically, their apical spur downward bent; first segment of middle and hind tarsi inward spinulose apically; latter as long as following three combined. Female: anterior angles of clypeus rounded; pronotum sericeous and relatively more coarsely and densely punctured; fore tibiae normally shaped, their apical spur nearly straight; first segment of middle and hind tarsi without apical spinulae and longer than following two combined.

DISTRIBUTION. South Africa (Natal, Cape Province).

Genus *PSEUDOMOTHON* Pittino, 1984

Pseudomothon Pittino, 1984: 311

TYPE SPECIES: *Pseudomothon arabicus* Pittino, 1984 (original designation).

DESCRIPTION. Small size species (length about 5 mm), oblong, moderately convex, feebly shiny; head, sides of pronotum and of elytra straightly pubescent. Yellowish. Head distinctly narrowed frontwardly; epistome posteriorly feebly gibbous, widely flat distally, irregularly, coarsely and subgranulose punctured, punctures setigerous; clypeus roundly frontward protruding at middle, subsinuate at sides before distinct genal sutures, very thinly bordered. border feebly upturned, crenulate and elongately ciliate; genae quite rounded, subauriculate, ciliate, strongly less protruding than eyes; latter very large; frontal suture faint, not at all tuberculate. Pronotum moderately transverse, the greatest width at middle; convex, doubly, irregularly and rather coarsely punctured thus it seems almost scabrose; fore margin thinly bordered; sides narrowed frontwardly, with border thin, subcrenulate and elongately ciliate; hind angles broadly rounded; base very thickly bordered. Scutellum small, triangularly elongate. Elytra elongate, somewhat widened posteriorly, laterally and apically straightly pubescent, feebly depressed toward sutural apical angle, not denticulate at shoulder, finely and superficially striate; striae nearly impunctate, not at all crenulate; interstices moderately convex, sparsely and superficially punctured on disc, lateral ones serially finely granulate. Hind coxae and trochanters strongly developed, subcarinate. Abdominal sternites densely pubescent, with distinct marginal suture, slightly alutaceous and with two irregular transverse belts of fine straightly setigerous granules. Middle and hind femora stout, broad, strongly dilatate. Fore tibiae truncate apically, distally sharply tridentate and proximally faintly crenulate at outer margin; upper side with some superficial large punctures; their apical spur small, short and strongly bent downward. Segments of anterior tarsi short, rather plump, moderately widened toward apex. Middle and hind tibiae very broad, gradually dilatate from base to apex, distinctly denticulate and densely pubescent along upper and lower edge, on outer face with a complete anteapical transverse carina, the proximal one somewhat incomplete; apically fimbriate with short and slightly unequal spinules (in holotype specimen the apical spinules of hind tibiae are quite lacking probably because wearing). Middle and hind tibiae apical spurs situated inside near apical angle beside the insertion of first tarsomere. Middle and hind tarsi distinctly longer than tibiae; their segments triangularly widened apically. Claws very elongate, slender, slightly curved and almost setaceous. Fourth segment of maxillary palpi subconical, widened basally, more than twice longer than third segment. Pygidium strongly microreticulate thus dull,

densely and distinctly granulose, elongately pubescent. Wings normally developed. Epipharynx extraordinarily shaped, frontward triangularly protruding, epitorma wide and very short; corypha quite lacking; chaetopariae very strong and elongate but antero-laterally reduced; nesium strongly widened. Males unknown.

DISTRIBUTION. Saudi Arabia.

Pseudomothon arabicus Pittino, 1984 (figs 980, 984)

Pseudomothon arabicus Pittino, 1984: 312

TYPE LOCALITY: Bahara, Makkah Prov., Saudi Arabia.

TYPE DEPOSITORY: Naturhistorisches Museum. Basel (holotype female examined).

DESCRIPTION. Length about 5 mm; elongate, nearly parallel-sided but somewhat widened posteriorly, slightly convex, alutaceous thus almost dull; head anteriorly, sides of pronotum and elytra laterally with fine, elongate and rather straight pubescence. Yellowish; clypeal margin, sides of pronotum and elytral suture narrowly red-brownish; legs testaceous; antennal club pale yellow. Head frontwardly distinctly narrowed; epistome very feebly gibbous at middle, flat toward clypeal margin, rather coarsely, densely, irregularly and subgranulosely punctured, distal punctures straightly setigerous; clypeus roundly protruding frontward at middle and inwardly subsinuate at sides; genal sutures subcariniform; genae subauriculate, quite rounded, strongly less protruding than eyes; frontal suture faint; front rather superficially, irregularly and coarsely punctured. Pronotum moderately transverse, rather strongly convex, densely, doubly and irregularly punctured, punctures somewhat irregularly sized; large punctures, near four times larger than small punctures, rather superficial, somewhat cariose at centre; smaller and deeper punctures irregularly mixed; fore margin thinly bordered and widely membranous; anterior angles obsolete; sides distinctly narrowed frontward, faintly bordered, border subcrenulate and very elongately ciliate; hind angles broadly rounded; base thickly bordered, border smooth, shiny and glabrous. Scutellum alutaceous impunctate, basally somewhat depressed at middle. Elytra elongate, slightly widened posteriorly, somewhat depressed toward sutural apical angle; striae fine, indistinctly punctured, not at all crenulate and nearly faint apically; interstices moderately convex, alutaceous, irregularly and superficially punctured on disc, finely subgranulose and shortly pubescent on apical declivity; lateral ones with longitudinal row of very small and straightly setigerous granula; epipleural margin densely ciliate; cilia gradually shorter toward apex. Metasternal plate finely and sparsely punctures distally, punctures elongately setigerous, smooth and feebly longitudinally grooved at middle, the groove bifid and posteriorly surrounding an oval, flat and smooth areola. Hind tibiae superior apical spur long less than half of first tarsal segment; latter distinctly shorter than following two combined. Male unknown.

DISTRIBUTION. The species is so far known by holotype female specimen, collected on May 8th, 1978, from type locality only.

Genus *PSEUDOMOXYOMUS* Petrovitz, 1962

Pseudoxymus Petrovitz, 1962: 127

Drepanocanthus (*Pseudoxymus*); Bordat, 1993: 382

TYPE SPECIES: *Pseudoxyomus rubescens* Petrovitz, 1962 (monotypy).

DESCRIPTION. Small size species (length 3-4 mm), oval elongate, strongly convex, more or less shiny; glabrous or pubescent. Brown-blackish, sometimes elytra brown-yellowish. Head with epistome gibbous, simply punctured; punctation coarse or rough or granulose; clypeus sinuate at middle, rounded at sides; marginally glabrous but sometimes with one or two lateral bristles; genae rounded, ciliate, more protruding than eyes; latter small; frontal suture impressed, not tuberculate. Pronotum transverse, with more or less distinct median longitudinal groove toward base; simply punctured; punctation coarse or rough; sides rounded; lateral margins distinctly ciliate; base bordered, border bristled. Scutellum small, triangular, curved at sides and carinate at middle. Elytra without humeral denticle, with striae and interstices variously sculptured; epipleura wide, reaching apex. Fore tibiae with apical spur in both sexes; distally tridentate and proximally not serrulate at outer margin; upper side with few, large punctures sparsely scattered. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with elongate and alternately unequal spinules. Abdominal sternites joined one another but their sutural margins distinct. Pygidium partially exposed, with some sparse and straight apical setae. Sexual dimorphism shown in males by fore tibiae apical spur hooked apically; by first segment of middle and hind tarsi with spinulose, sometimes bifid, apical process at inner margin. Aedeagus with rather short paramera, straight, apically acuminate and with small inferior prominence near base. Epipharynx with anterior margin sinuate at each side; epitorma drop-shaped; corypha with two strong apical spiculae; pedia pubescent with a row of stout spines parallel to chaetopariae; latter more slender than strong spines of pedia; nesium widely transverse; tormae rather short.

DISTRIBUTION. Southern Afrotropical and Australian region.

REMARKS. *Pseudoxyomus* was recently recorded by Stebnicka & Howden (1995) from Australia under the name of *Harmogaster*.

Pseudoxyomus rubescens Petrovitz, 1962 (figs 981, 985-987)

Pseudoxyomus rubescens Petrovitz, 1962: 128; Endrödi, 1979: 213 (male description)

Drepanocanthus (Pseudoxyomus) rubescens; Bordat, 1993: 385

TYPE LOCALITY: "Umgeb. Johannesburg, Sudafrika" [South Africa].

TYPE DEPOSITORY: Muséum d'Histoire naturelle. Geneva (lectotype female examined).

DESCRIPTION. Length 3-4 mm, oval-elongate, strongly convex, dull, glabrous. More or less dark brown-blackish. Head with epistome gibbous, granulosely and rather densely punctured; clypeus moderately sinuate at middle, widely rounded at sides, marginally nearly glabrous; genae rounded, more protruding than eyes; frontal suture very finely impressed, not tuberculate; front simply, regularly, rather coarsely and densely punctured. Pronotum transverse, with trace of median longitudinal groove at basal quarter, greater width before hind angles; simply, regularly, coarsely and rather densely punctured throughout; sometimes punctures subelliptical at sides of disc; latter moderately rounded at sides, finely bordered, border rather elongately and sparsely ciliate; base distinctly bordered, rather shortly bristled. Scutellum narrow with curved sides and with a feeble

median carina. Elytra without humeral denticle; striae as wide as interstices, with a median narrow carina separating two rows of punctures contiguous to lateral margin of interstices; second interstice rather flat and shortened preapically as well as fourth, sixth and eighth ones. Middle and hind femora stout, rather densely punctured and finely pubescent. Abdominal sternites finely, sparsely and roughly punctured, punctures shortly setigerous. Male: fore tibiae apical spur hooked apically; first segment of middle and hind tarsi apically with spinulose bifid process at inner margin; hind tibiae superior apical spur as long as first tarsal segment; latter as long as following three combined. Female: fore tibiae apical spur straight; first segment of middle and hind tarsi without spinulose apical process; hind tibiae superior apical spur distinctly longer than first tarsal segment; latter as long as following two combined.

DISTRIBUTION. South Africa (Cape Province, Transvaal).

Genus *TRIGONOSCELUS* Petrovitz, 1963

Aphodius (Trigonoscelus) Petrovitz, 1963b: 633

Trigonoscelus; Petrovitz, 1980: 611; M. Dellacasa, 1988a (1987): 316 (Didactyliini)

TYPE SPECIES: *Aphodius coelebs* Petrovitz, 1963 (original designation).

DESCRIPTION. Small size species (length 4-4.5 mm), elongate, parallel-sided, subshiny; glabrous, elytra pubescent laterally and apically fringed with short setae. Brown-yellowish; head and pronotum darker. Head rather small; epistome feebly gibbous, simply and coarsely punctured; clypeus faintly sinuate at middle, widely rounded at sides, thinly bordered, border glabrous, anteriorly upturned; genae small, not ciliate, feebly more protruding than eyes; latter large; genal sutures cariniform; frontal suture obsolete. Pronotum transverse, doubly punctured; sides widely rounded, lateral margins ciliate; base bordered or not. Scutellum small, widely triangular, apically rounded, at base as wide as first three elytral interstices. Elytra not denticulate at shoulder, finely striate; striae subcrenulate, ninth stria joined with tenth before humeral callus; interstices nearly flat, irregularly punctured. Fore tibiae with apical spur in both sexes, distally tridentate and proximally not serrulate at outer margin; upper side sparsely punctured. Middle and hind tibiae with vestiges of transverse carinae on outer face; apically fimbriate with short and equal spinules. Middle and hind tarsi longer than tibiae. Abdominal sternites joined one another. Pygidium with sparse and straight setae. Sexual dimorphism shown in males by metasternal plate posteriorly foveolate and distally pubescent (ex Petrovitz, 1980: 611). Epipharynx widely transverse; anterior margin sinuate; epitorma nearly faint; pedia shortly and sparsely pubescent; chaetopariae strong but sparsely arranged²¹.

DISTRIBUTION. South-eastern Palearctic region.

Trigonoscelus coelebs (Petrovitz, 1963) (figs 983, 988)

Aphodius (Trigonoscelus) coelebs Petrovitz, 1963b: 634

Trigonoscelus coelebs; M. Dellacasa, 1988a (1987): 258 (Didactyliini)

²¹ We had the opportunity to study only the female holotype that is in rather bad conditions. As a matter of fact, epipharynx resulted damaged and it was impossible to check its proximal part.

TYPE LOCALITY: "Umgbg. Karachi, Pakistan".

TYPE DEPOSITORY: Muséum d'Histoire naturelle. Geneva (holotype female examined).

DESCRIPTION. Length about 4.5 mm, elongate, parallel-sided, subshiny; glabrous, elytra laterally sparsely and rather elongately pubescent, fringed by short setae at apical margin. Head brownish with clypeal margin paler; pronotum brownish, distally shadowy brown-reddish, anterior angles widely brown-yellowish; elytra brown-yellowish with darker suture; legs brownish; antennal club yellowish. Head rather small; epistome gibbous, simply, rather irregularly, coarsely and densely punctured; punctation subrugose anteriorly; clypeus faintly sinuate at middle, widely rounded at sides; genae angulate, but the angle rounded at tip, feebly more protruding than eyes; frontal suture obsolete. Pronotum transverse, rather strongly convex, with trace of median longitudinal groove, microreticulate toward front angles; doubly punctured; small punctures fine and sparse; large punctures, six to ten times larger than small punctures, rather regular and dense; punctation more superficial near lateral margins and before front angles; sides broadly and regularly rounded; lateral margins distinctly bordered and with rather elongate, sparse cilia; base thinly bordered. Scutellum somewhat depressed and sparsely punctured at base. Elytra alutaceous; striae rather fine, superficially punctured, faintly crenulate; interstices flat, sparsely and irregularly punctured; lateral interstices and elytral preapical declivity with straight, rather elongate and sparse setae. Fore tibiae with apical spur rather short and apically rounded. Hind tibiae apical spurs very short; superior one shorter than first tarsal segment; latter shorter than following two combined. Male: metasternal plate posteriorly foveolate and distally pubescent (ex Petrovitz, 1980: 611). Female: metasternal plate convex, smooth and glabrous.

DISTRIBUTION. The species is so far known from type locality only.

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²² Cyrillic characters have been transliterated in accordance with British system.

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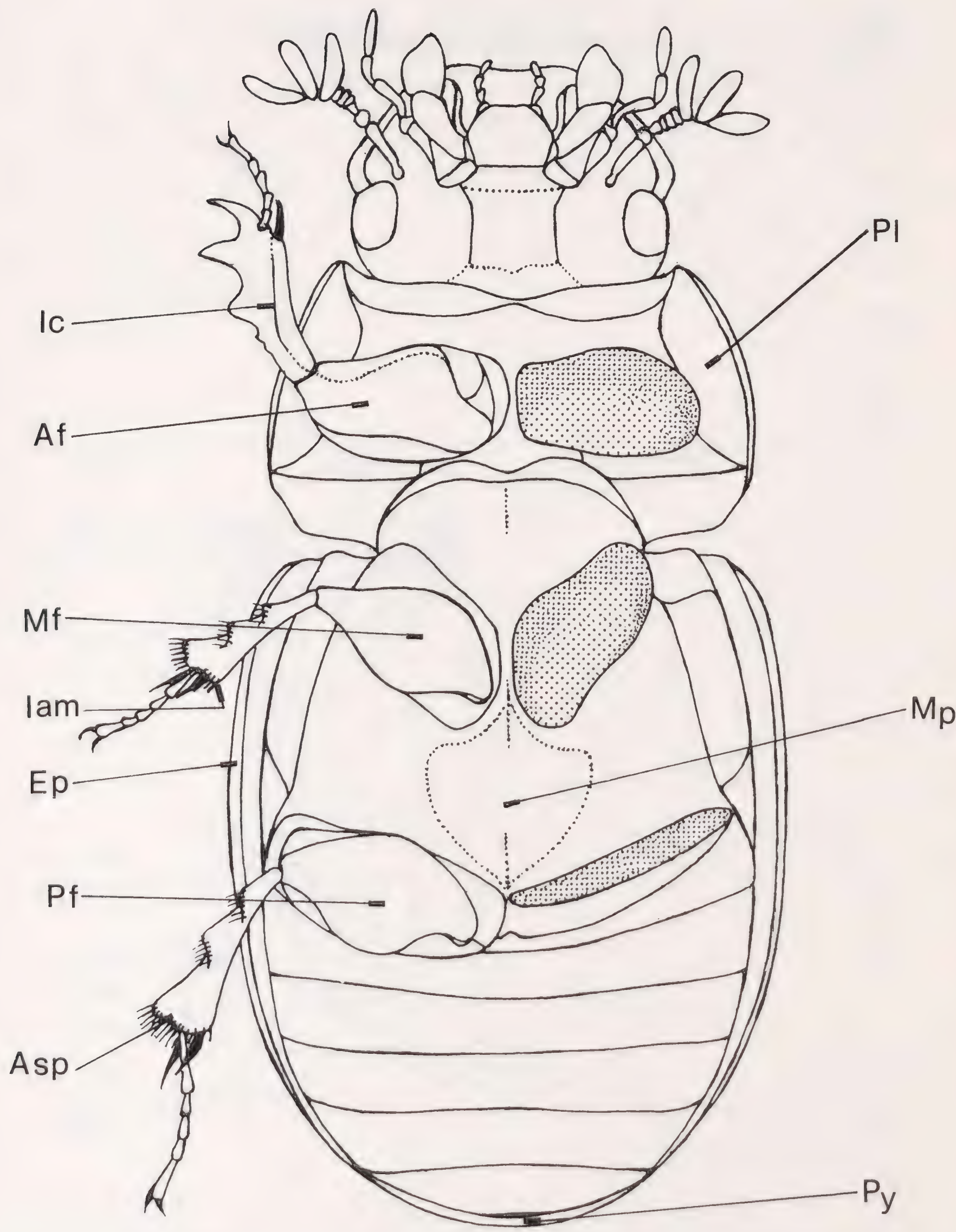


Fig. 1. Habitus of *Aphodius*, ventral view (Af: anterior femur; Asp: apical spinules; Ep: epipleuron; Iam: inferior apical margin; Ic: protibia inferior carina; Mf: middle femur; Mp: metasternal plate Pf: posterior femur; Pl: propleuron; Py: pygidium)

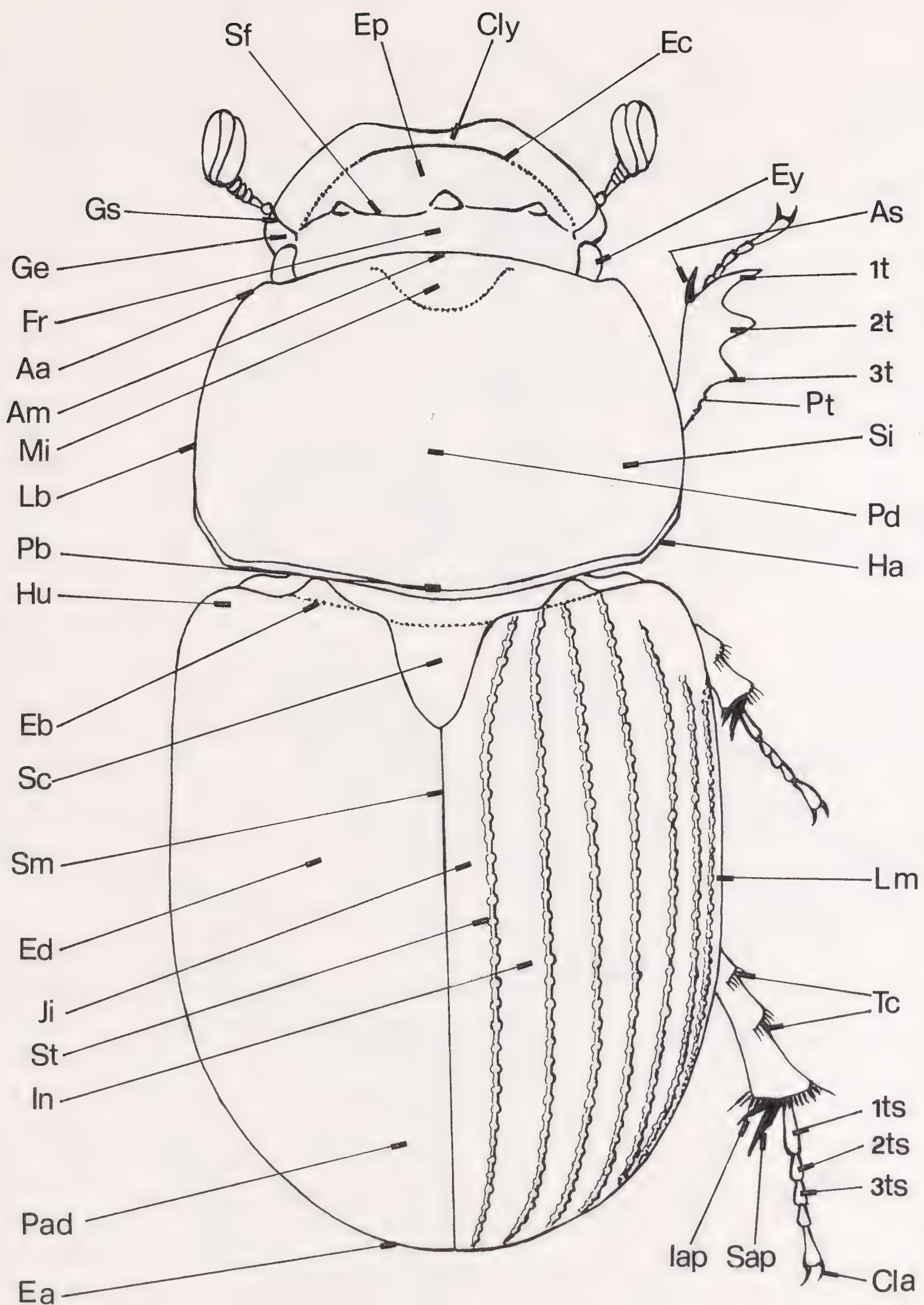


Fig. 2. Habitus of *Aphodius*, dorsal view (1t, 2t, 3t: first, second and third tooth; 1ts, 2ts, 3ts: first, second and third tarsal segment; Aa: anterior angle; Am: anterior margin; As: apical spur; Cla: claw; Cly: clypeus; Ea: elytral apex; Eb: elytral base; Ec: epistomal carina; Ed: elytral disc; Ep: epistome; Ey: eye; Fr: front; Ge: gena; Gs: genal suture; Ha: hind angle; Hu: humerus; Iap: inferior apical spur; In: interstice; Ji: juxtasutural interstice; Lb: lateral border; Lm: lateral margin; Mi: median impression; Pb: pronotal border; Pad: preapical declivity; Pd: pronotal disc; Pt: proximal teeth; Sap: superior apical spur; Sc: scutellum; Sf: frontal suture; Si: side; Sm: sutural margin; St: first stria; Tc: transversal carinae).

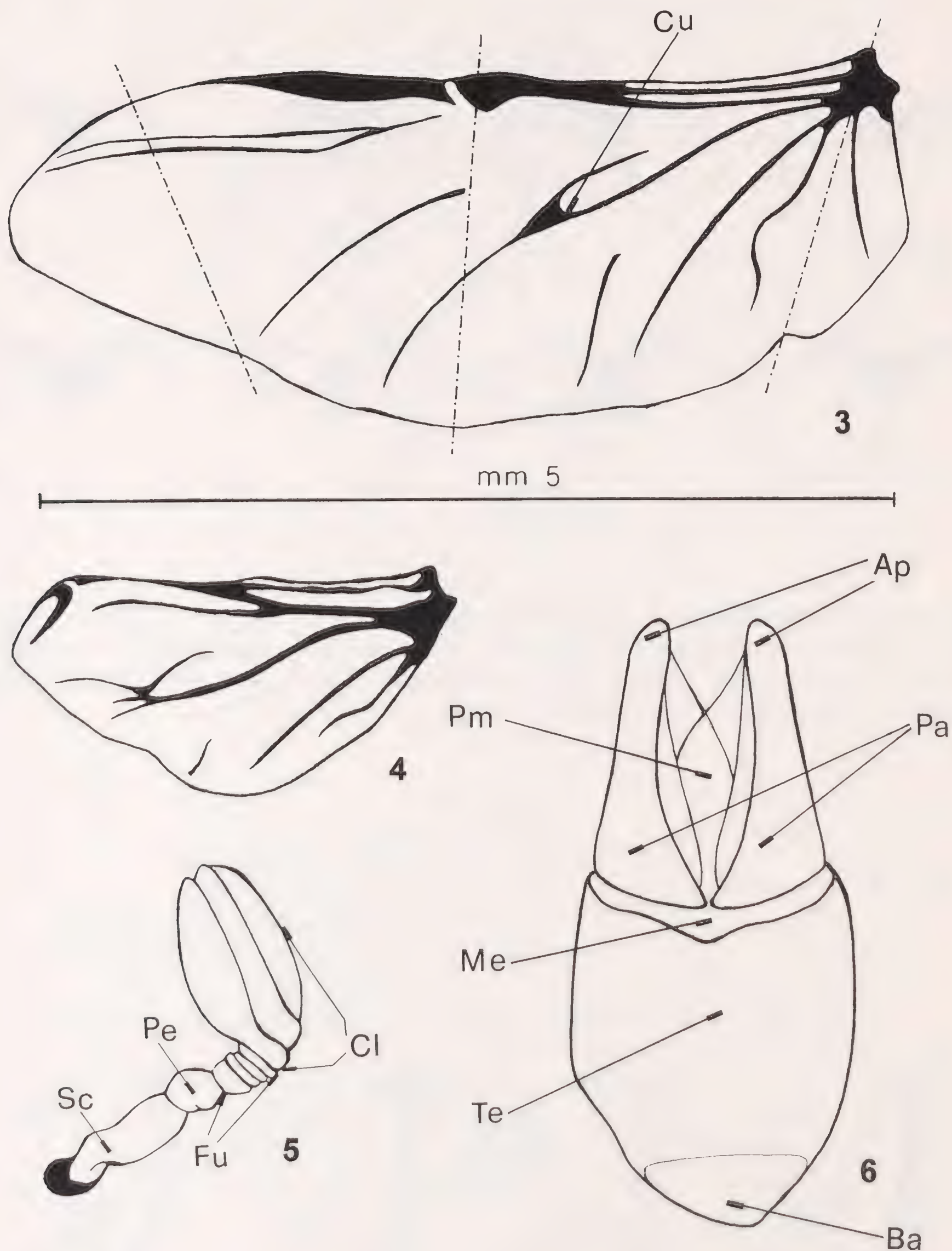
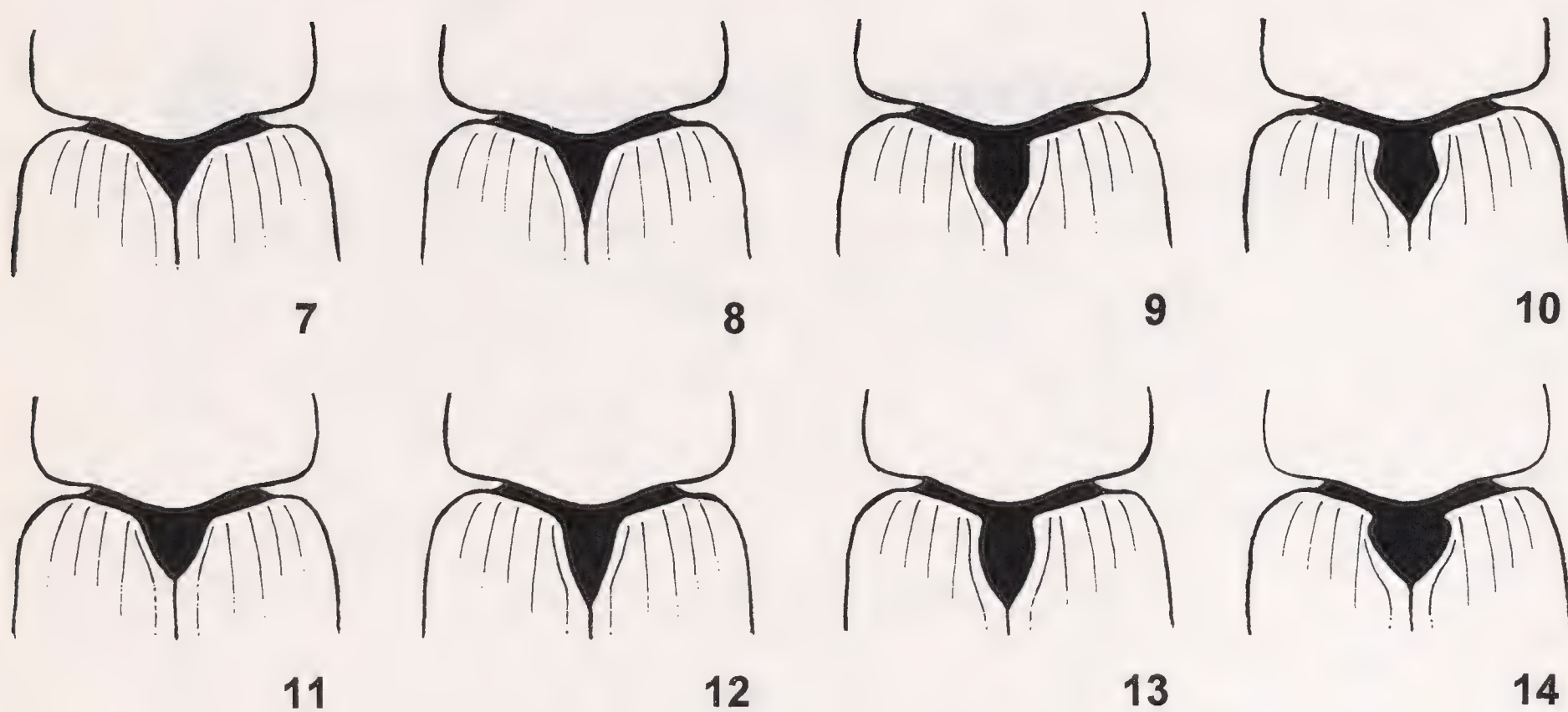


Fig. 3. Wing of *Neagolius amblyodon* male, normally winged (Cu: cubitus; dotted lines: folding sectors)

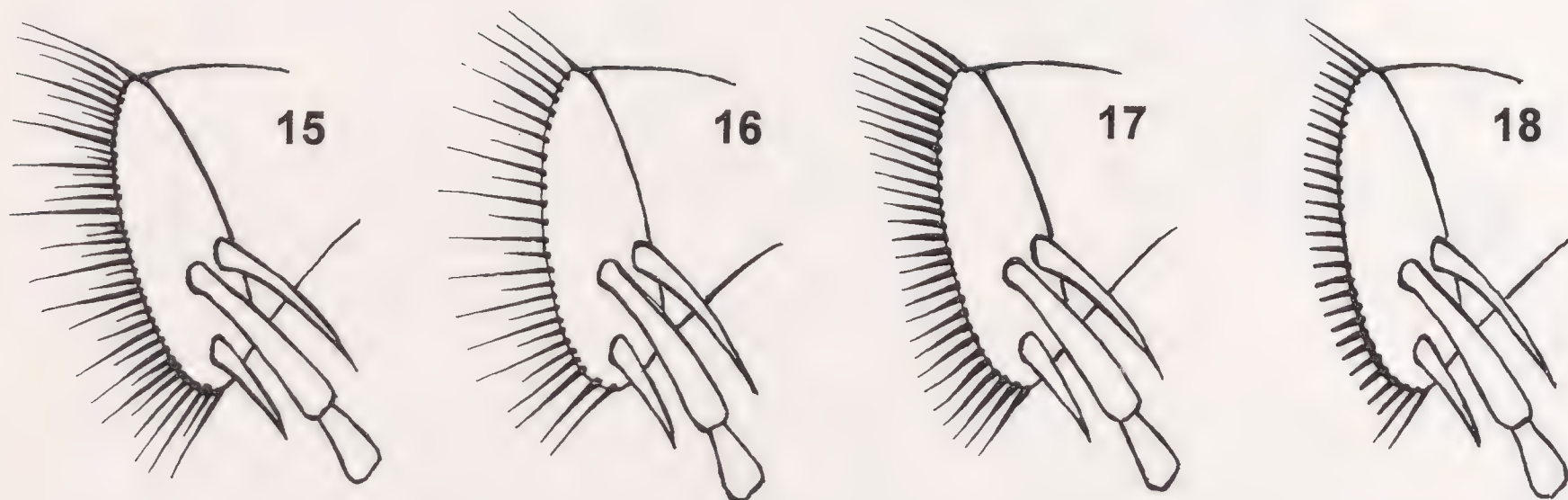
Fig. 4. Wing of *Neagolius amblyodon* female, brachypterous

Fig. 5. Antenna (Cl: club; Fu: funicle; Pe: pedicel; Sc: scape)

Fig. 6. Aedeagus, dorsal view (Ap: apex of paramera; Ba: base of tegmen; Me: connective membrane; Pa: paramera; Pm: inner membranous process; Te: tegmen).



Figs 7-14. Scutellum shapes: 7 - equilateral triangular (sides straight); 8 - isosceles triangular (sides straight); 9 - pentagonal (sides parallel); 10 - idem (sides convergent); 11 - equilateral triangular with curved sides (widely ogival); 12 - isosceles triangular with curved sides (narrowly ogival); 13 - amygdaliform; 14 - cordiform



Figs 15-18. Middle and hind tibiae apical spinules: 15 - unequal, irregularly elongate; 16 - idem, alternately elongate; 17 - idem, progressively elongate; 18 - equal and short.

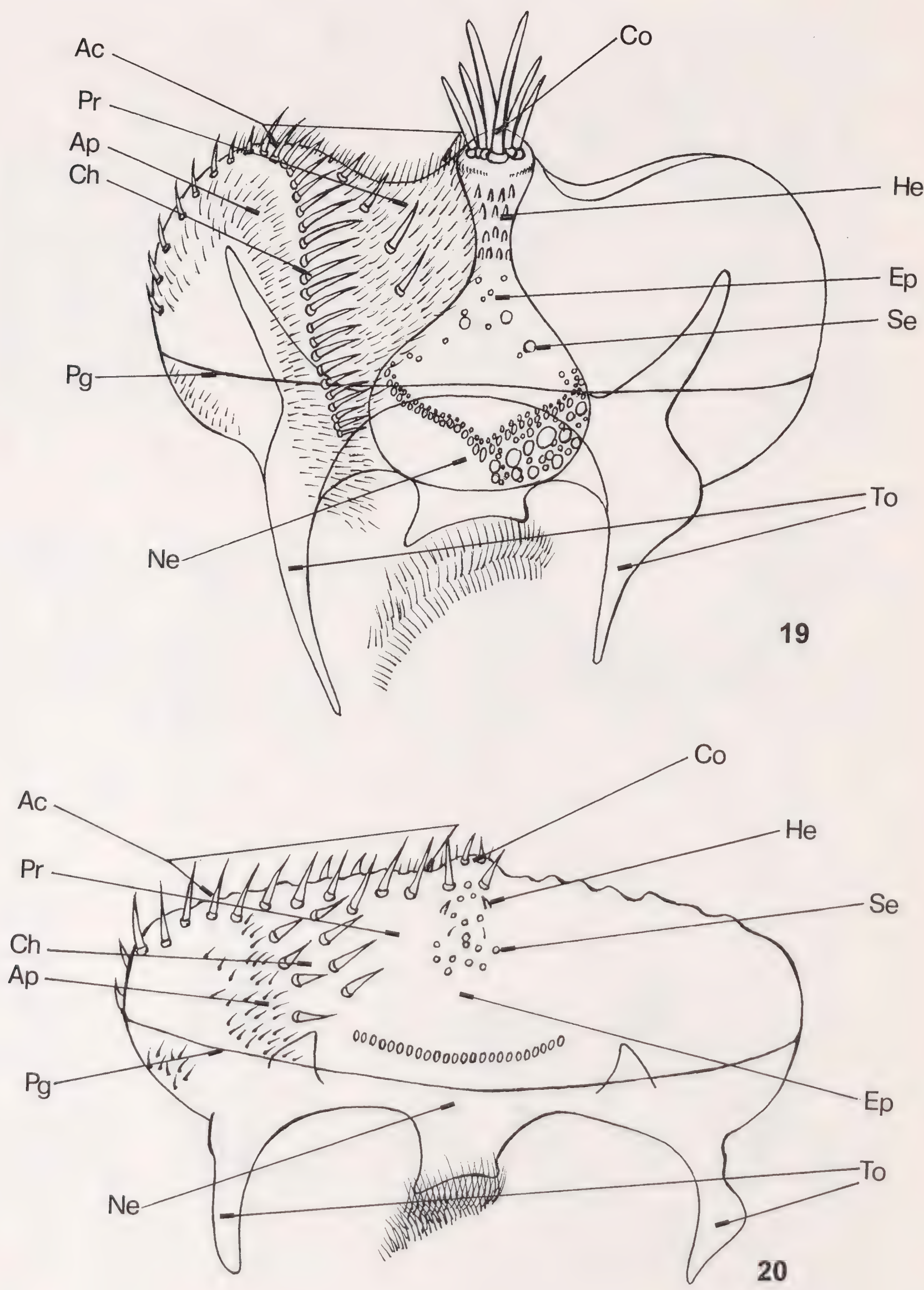
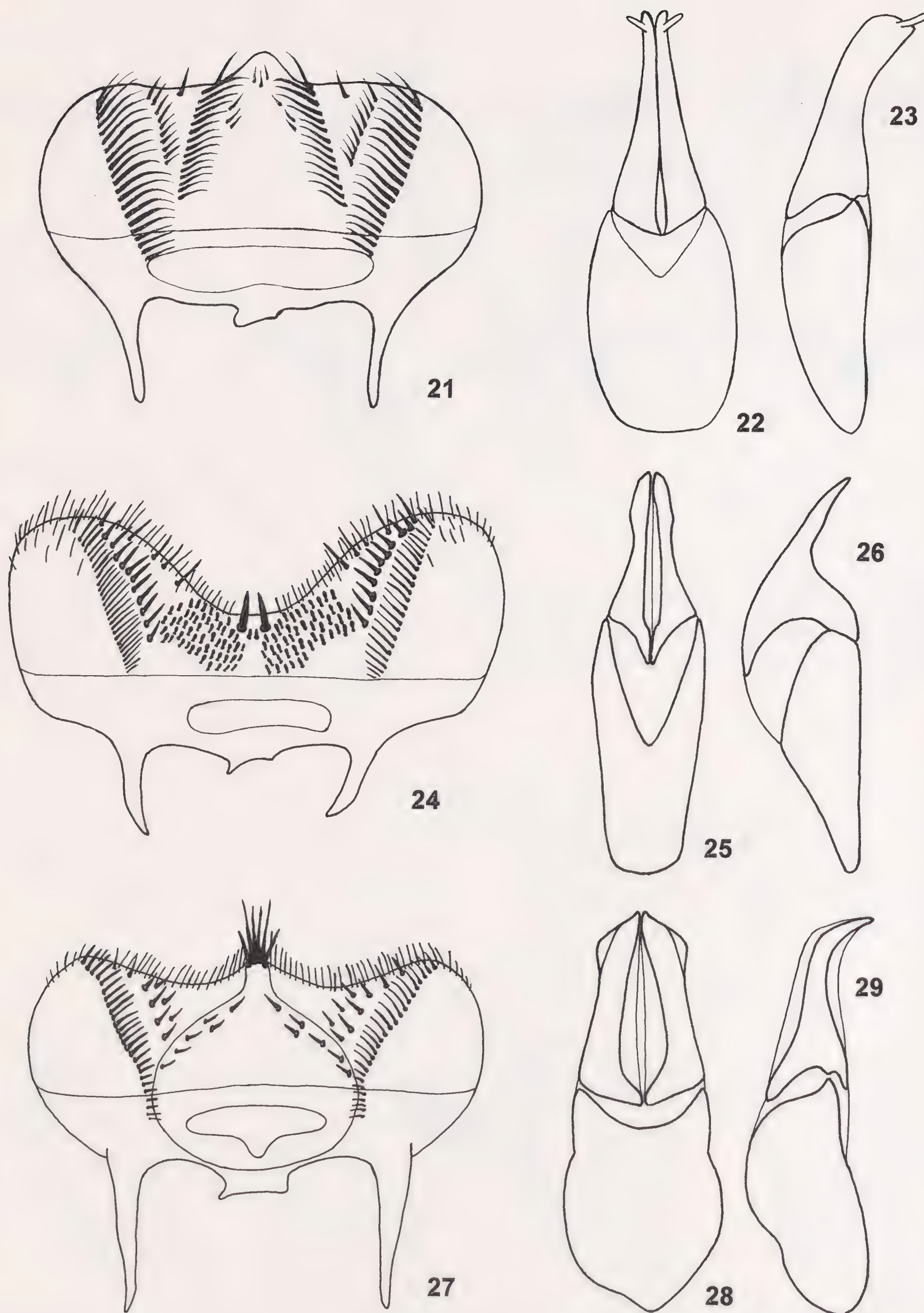
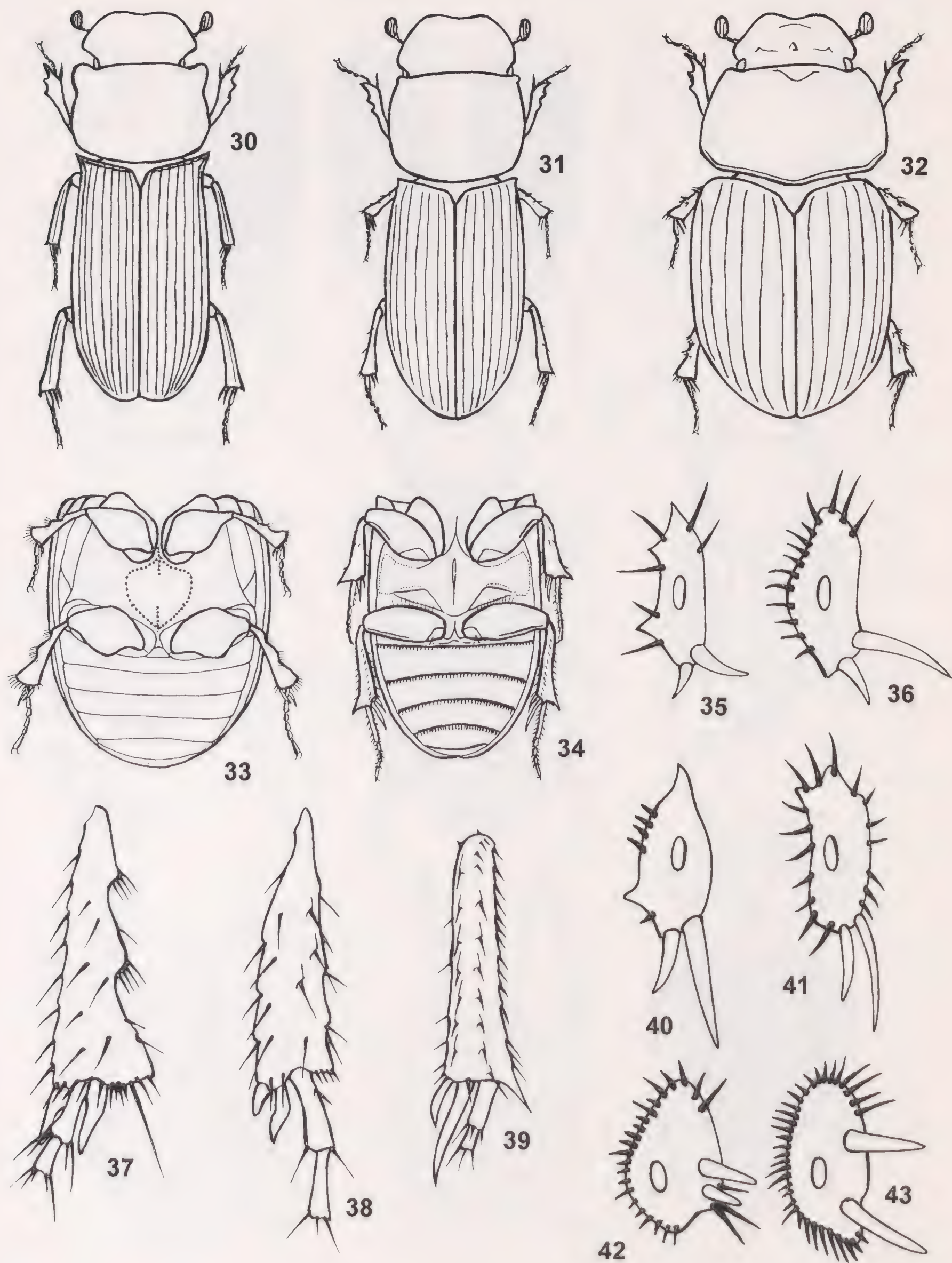


Fig. 19. Epipharynx adapted mainly for coprophagy (Ac: acropariae; Ap: apophobae; Ch: chaetopariae; Co: corypha; Ep: epitorma; He: helus; Ne: nesium; Pg: proplegmatium; Pr: prophobae; Se: sensillum; To: tormae)

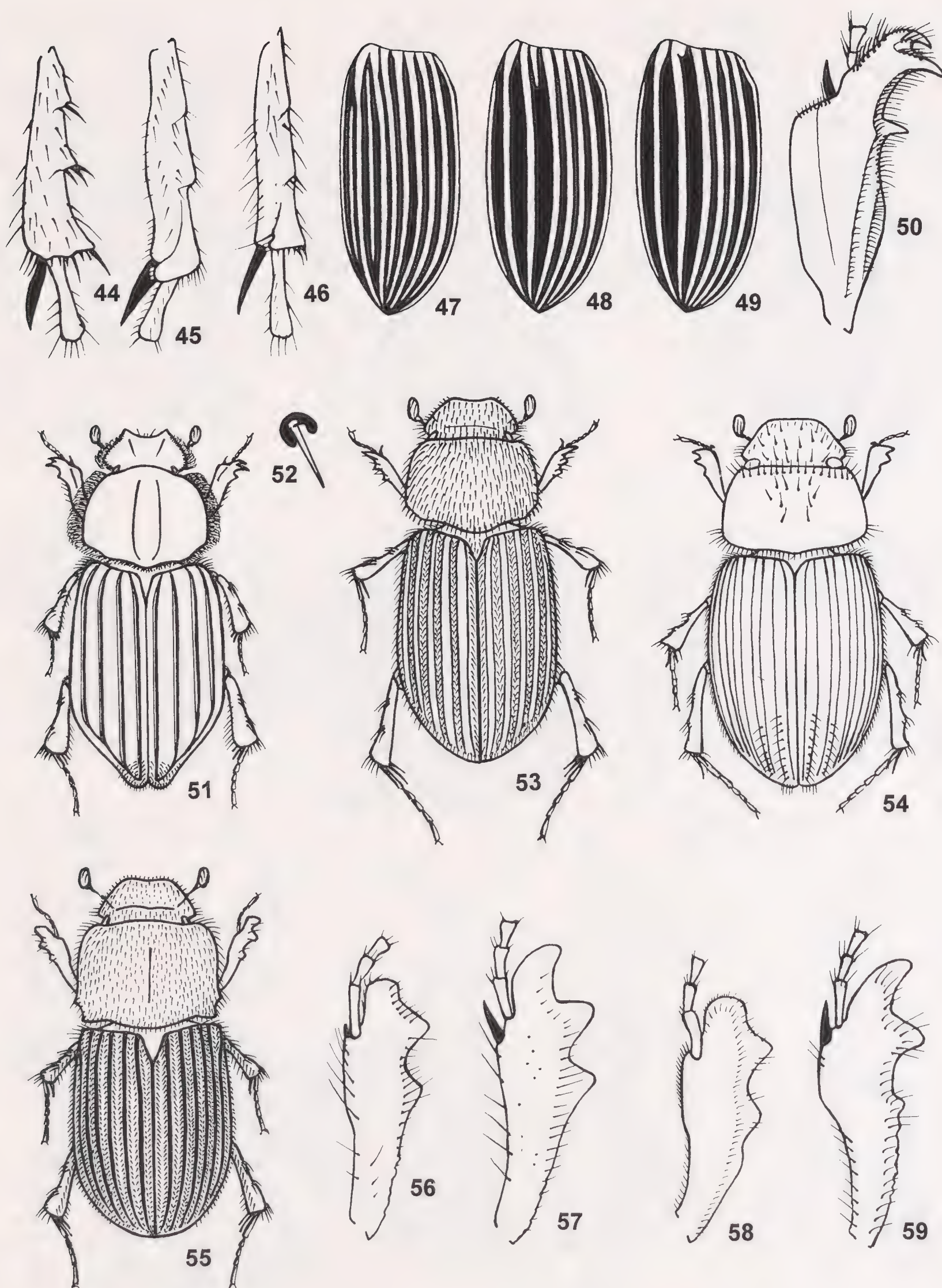
Fig. 20. Epipharynx adapted mainly for saprophagy (from Stebnicka & Howden, 1995, mod.) (acronyms are of the same meaning as per fig. 19).



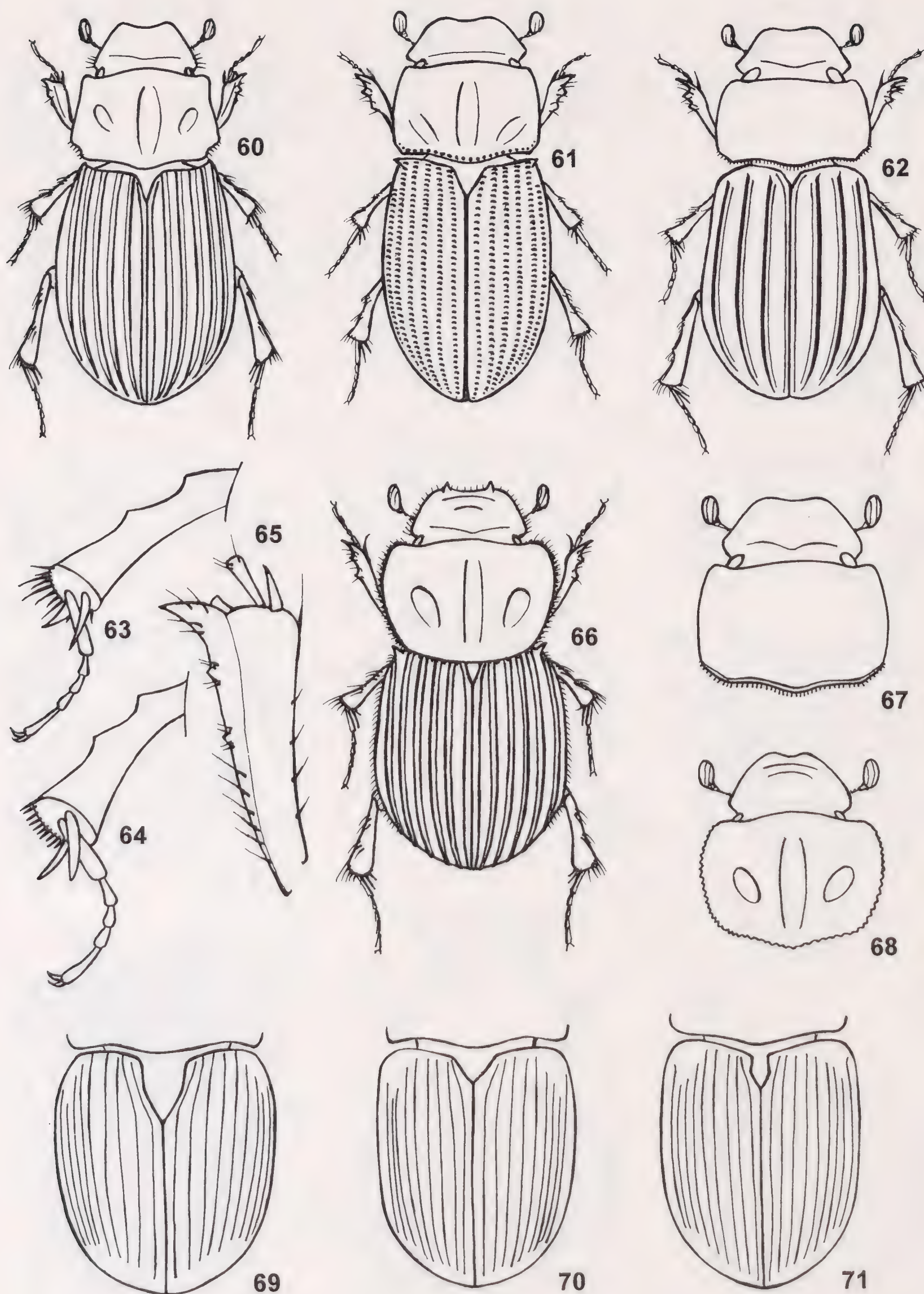
Figs 21-29. Scheme of epipharynx and aedeagus, dorsal and lateral view, of Aphodiidae: 21-23 - Eupariinae; 24-26 - Aphodiinae: Didactyliini; 27-29 - Aphodiinae: Aphodiini.



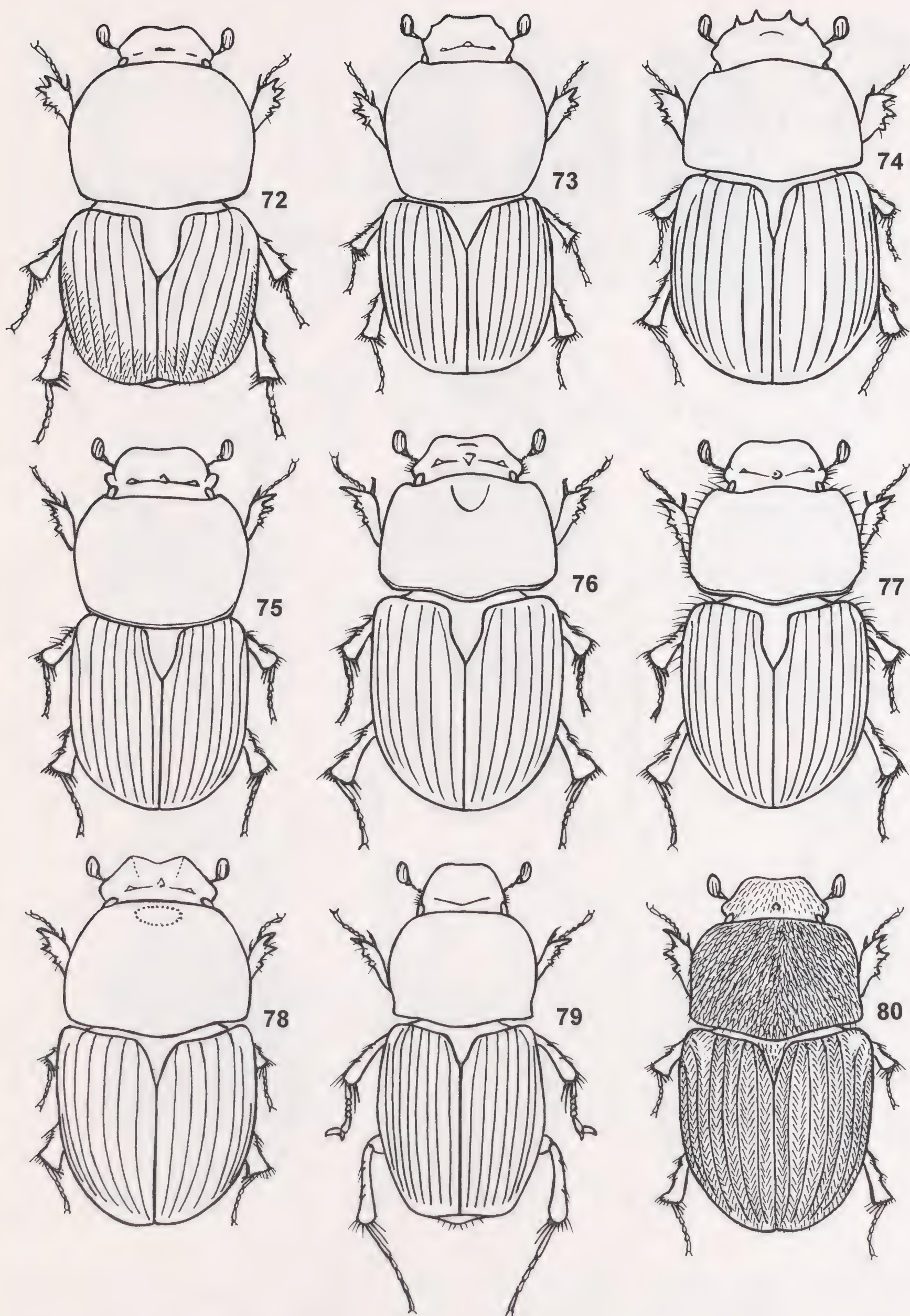
Figs 30-43: 30 - habitus of *Ataenius*; 31 - idem, of *Saprosites*; 32 - idem, of *Aphodius*; 33 - under side of *Aphodius*; 34 - idem, of *Ataenius*; 35 - distal face of *Aphotaenius* metatibia; 36 - idem, of *Ataenius* (*erratus* group); 37 - right hind tibia of Aphodiini (dorsal view); 38 - idem, of Didactyliini; 39 - idem, of Eupariinae; 40 - distal face of *Ataenius* (*picinus* group) metatibia; 41 - idem, of *Saprosites*; 42 - idem, of *Coptochirus*; 43 - idem, of *Osmanius*.



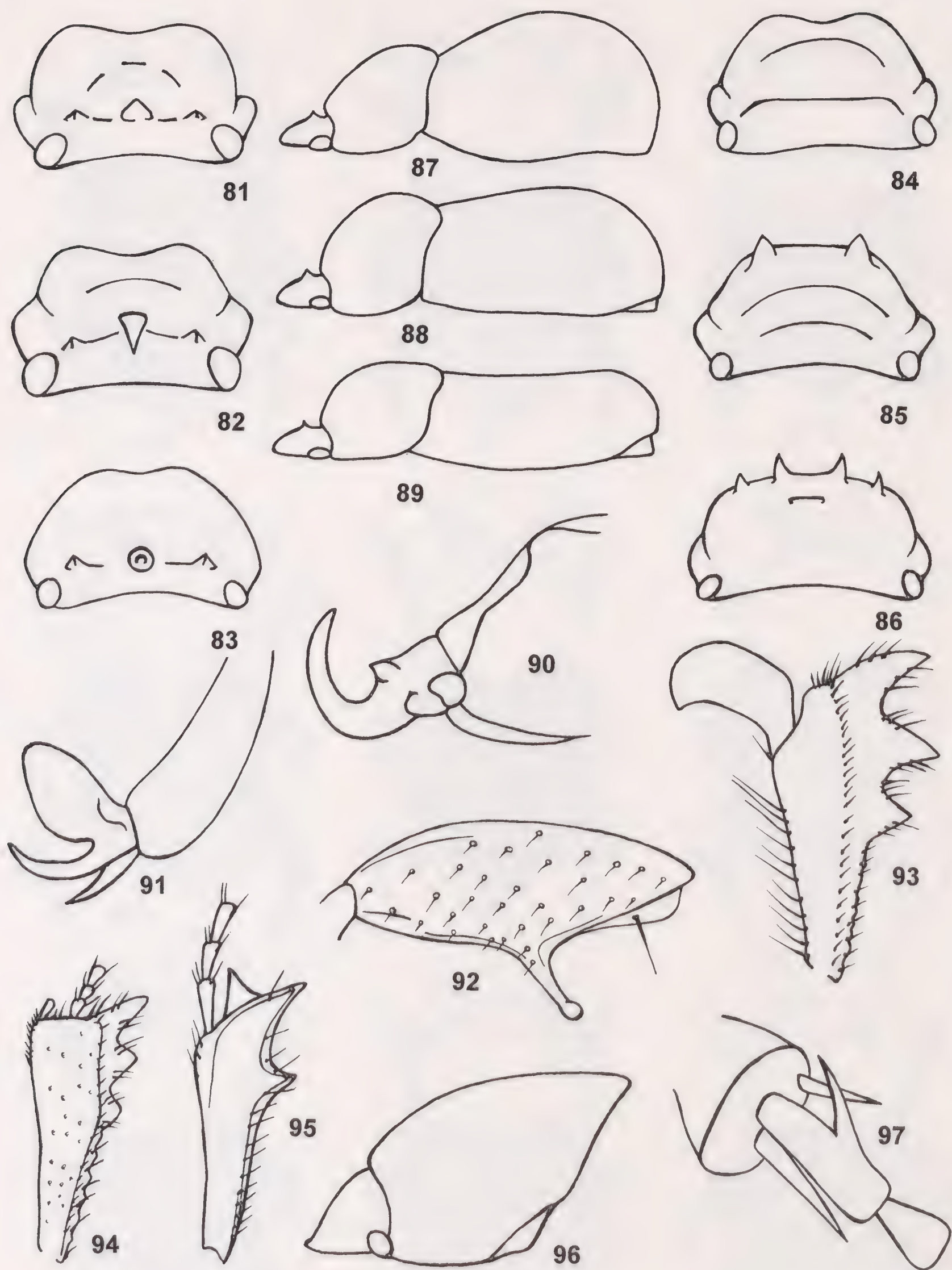
Figs 44-59: 44 - male left middle tibia of *Heptaulacus* (ventral view); 45 - idem of *Paracoptochirus*; 46 - idem of *Osmanius*; ; 47 - *Oxyomus*, left elytron (dorso-lateral view); 48 - *Heptaulacus*, idem; 49 - *Euheptaulacus*, idem; 50 - *Sybax*, male right protibia (dorsal view); 51 - *Sybax*, habitus; 52 - horse-shoe shape pronotal puncture of *Heptaulacus*; 53 - *Heptaulacus*, habitus; 54 - *Lorditomaeus*, habitus; 55 - *Paracoptochirus*, habitus; 56 - *Osmanius*, male left fore tibia (ventral view); 57 - idem, female; 58 - *Paracoptochirus*, male left fore tibia (ventral view); 59 - idem, female.



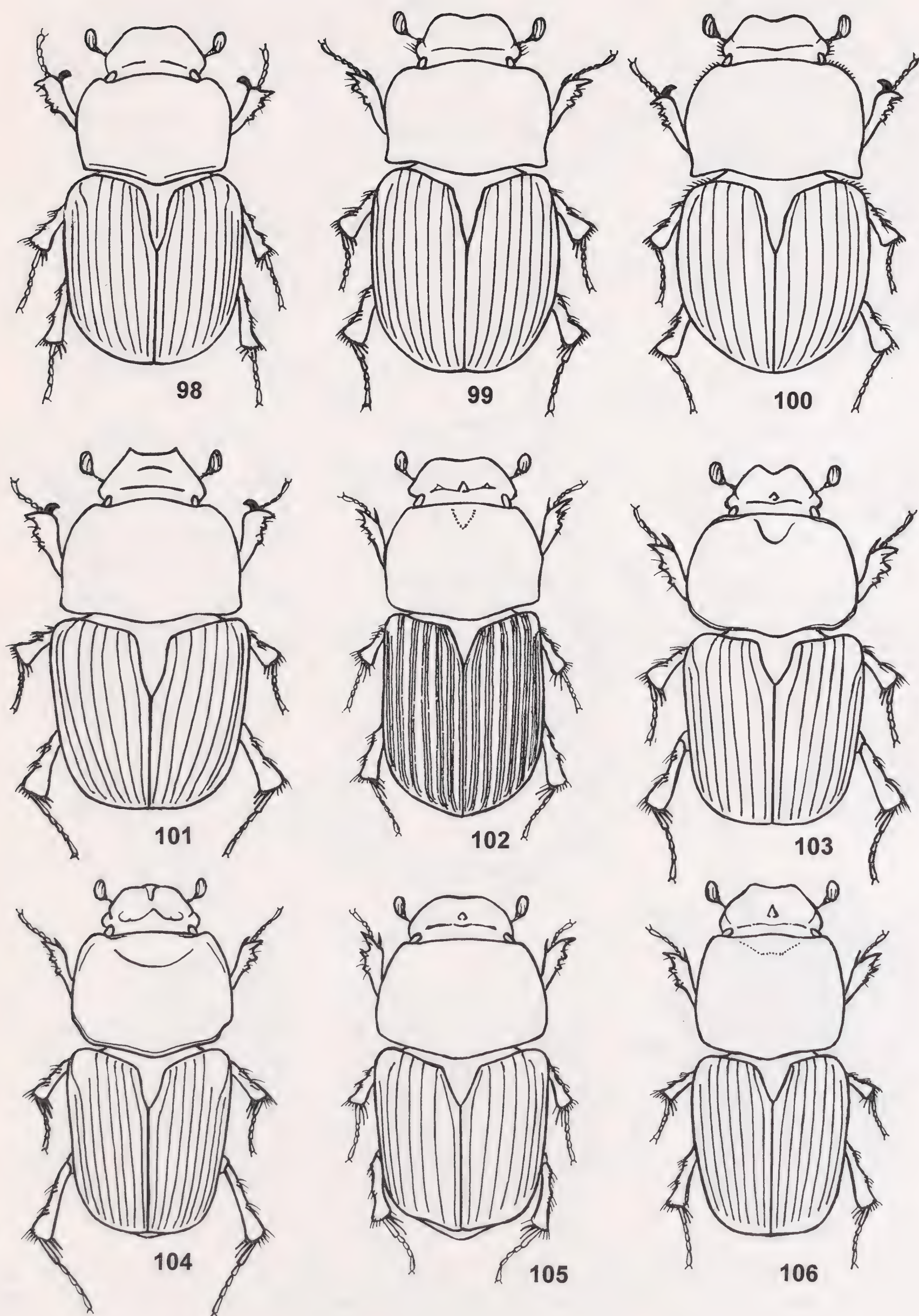
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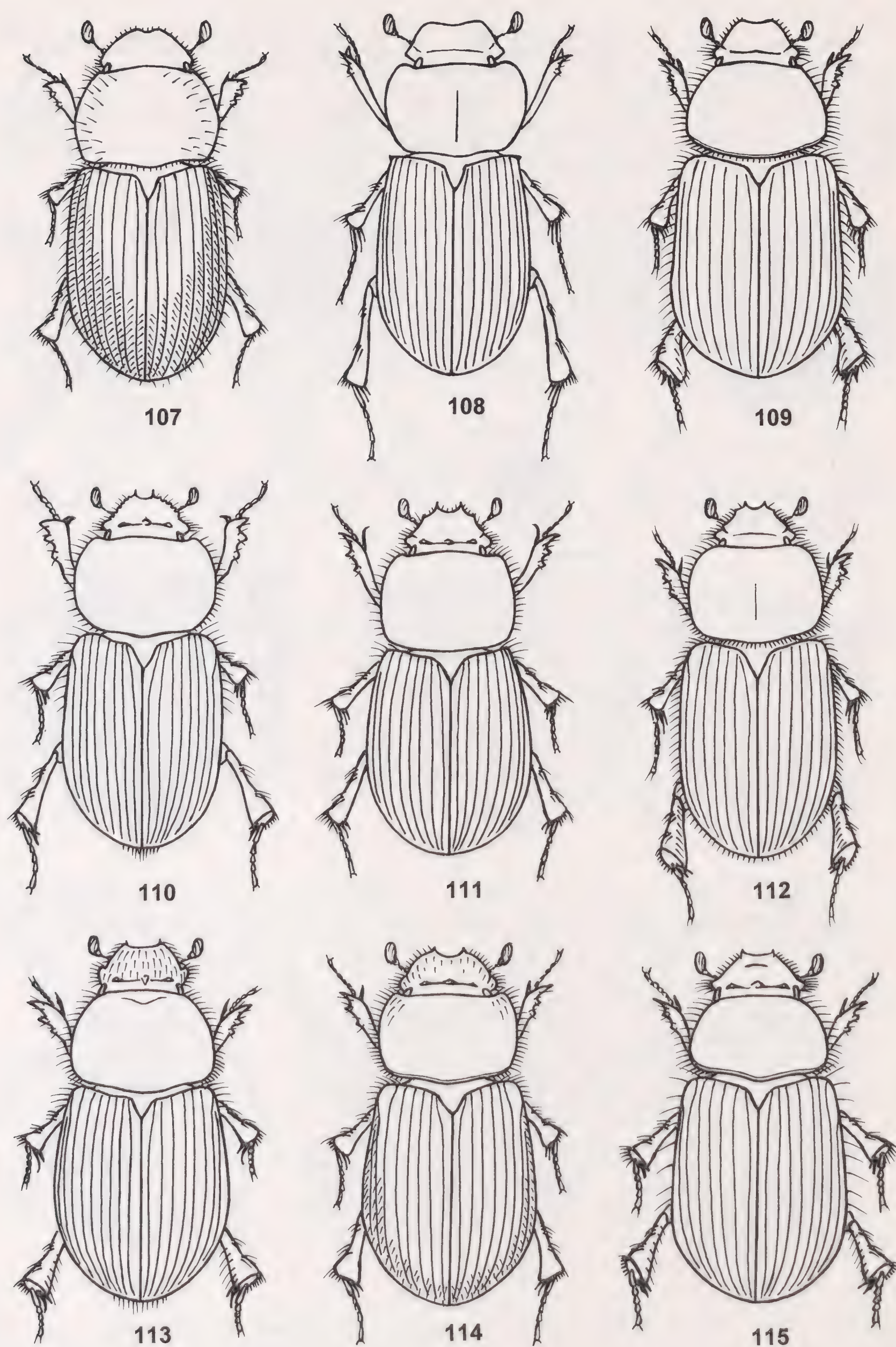
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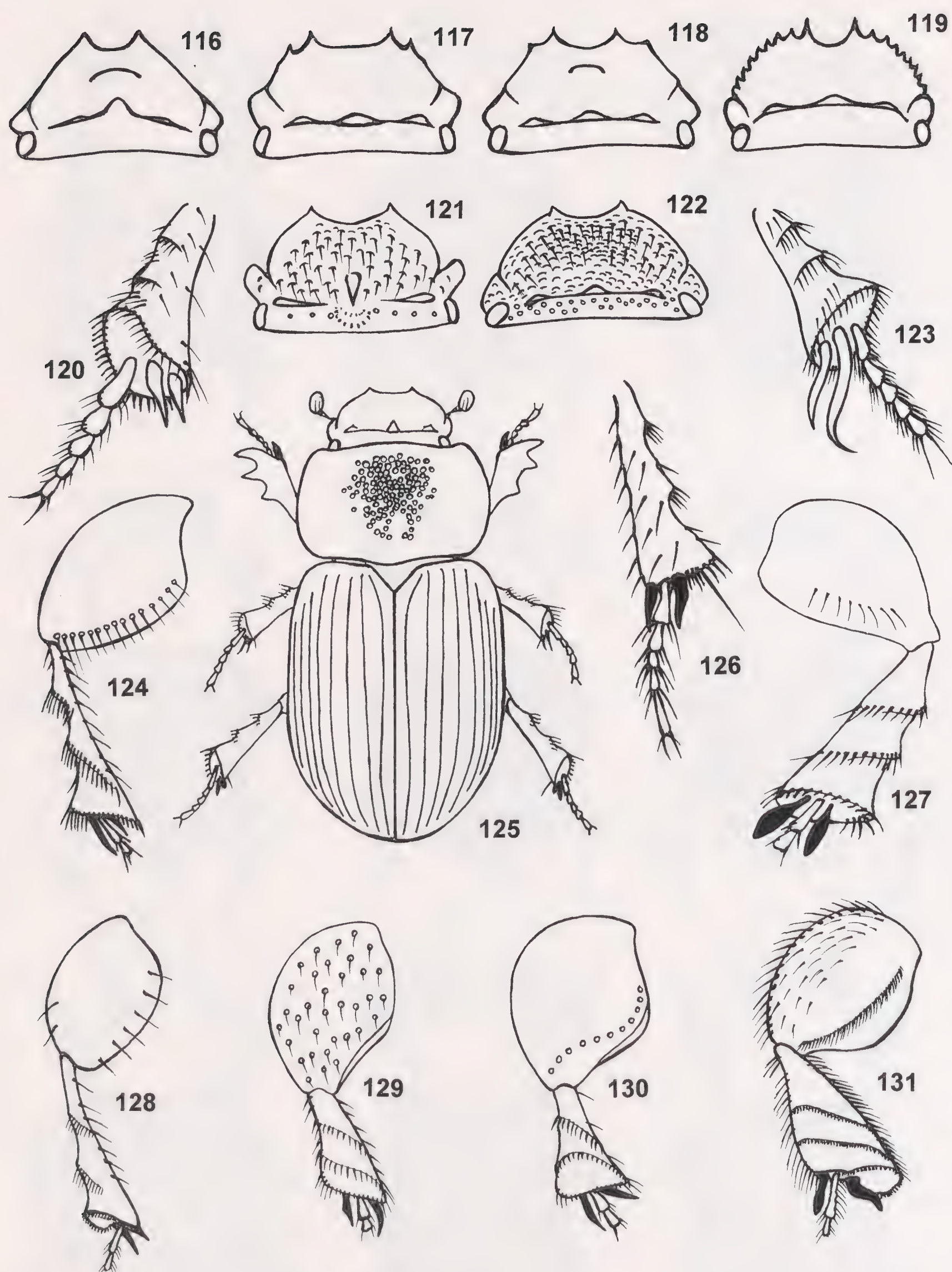
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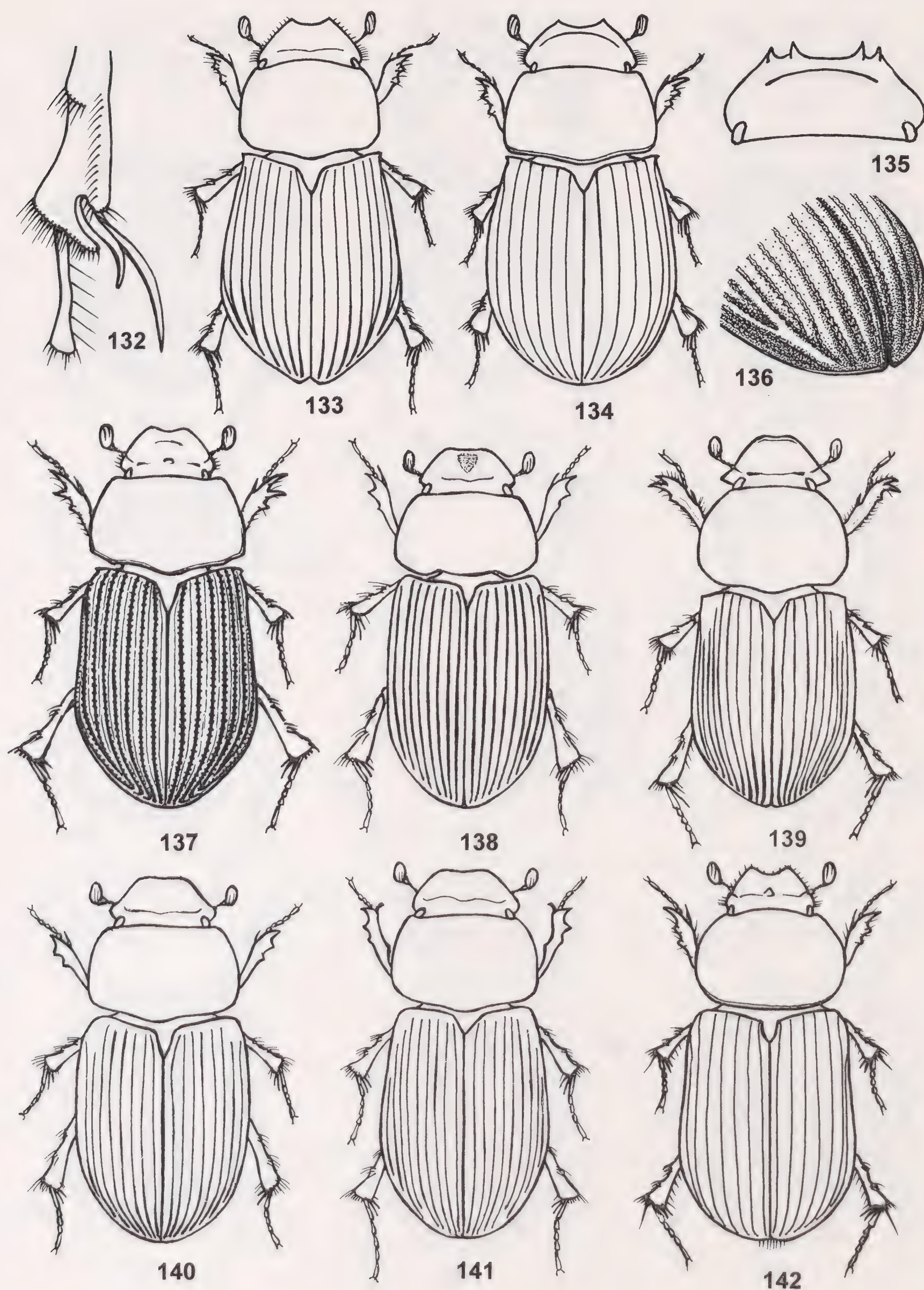
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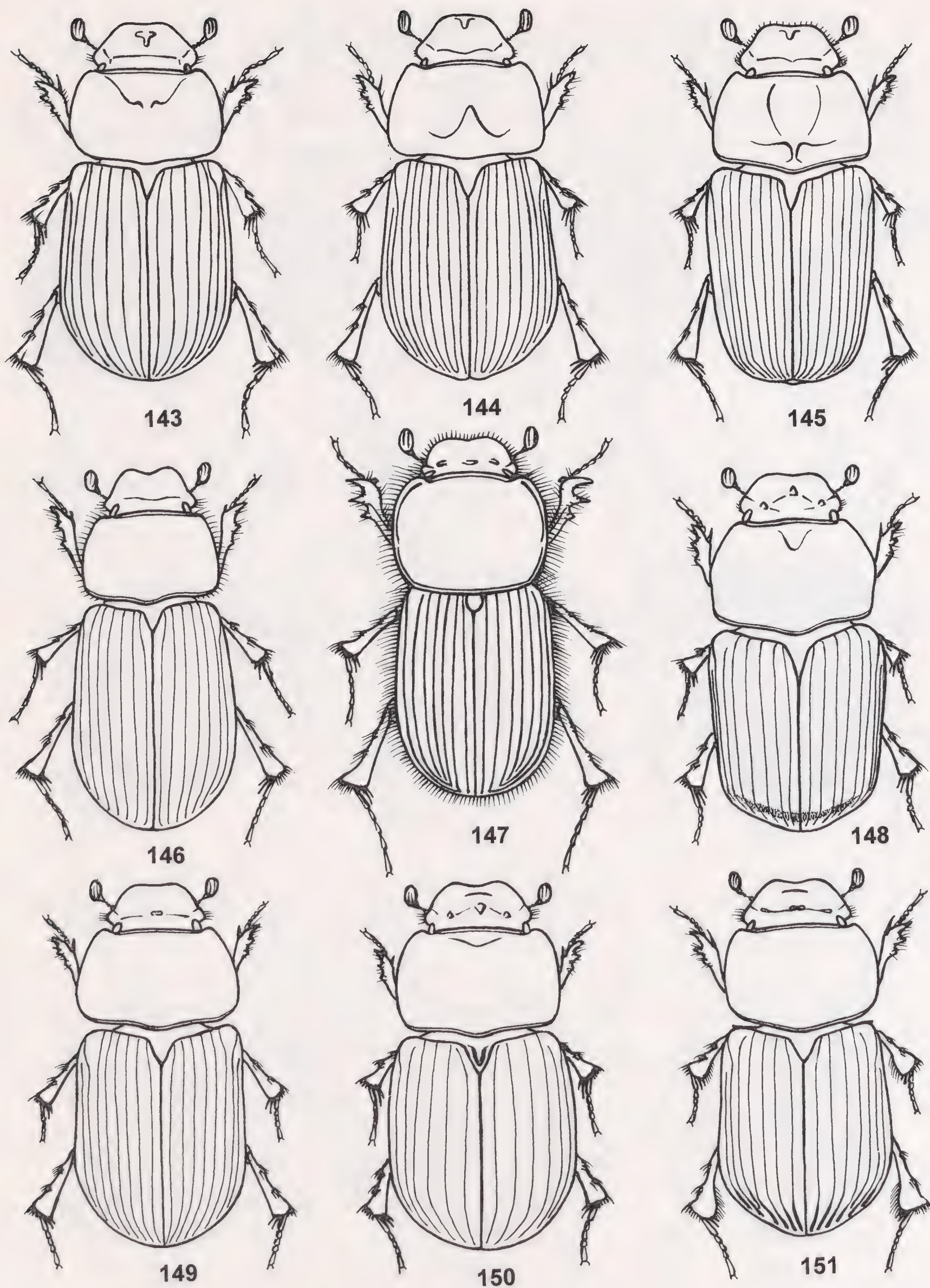
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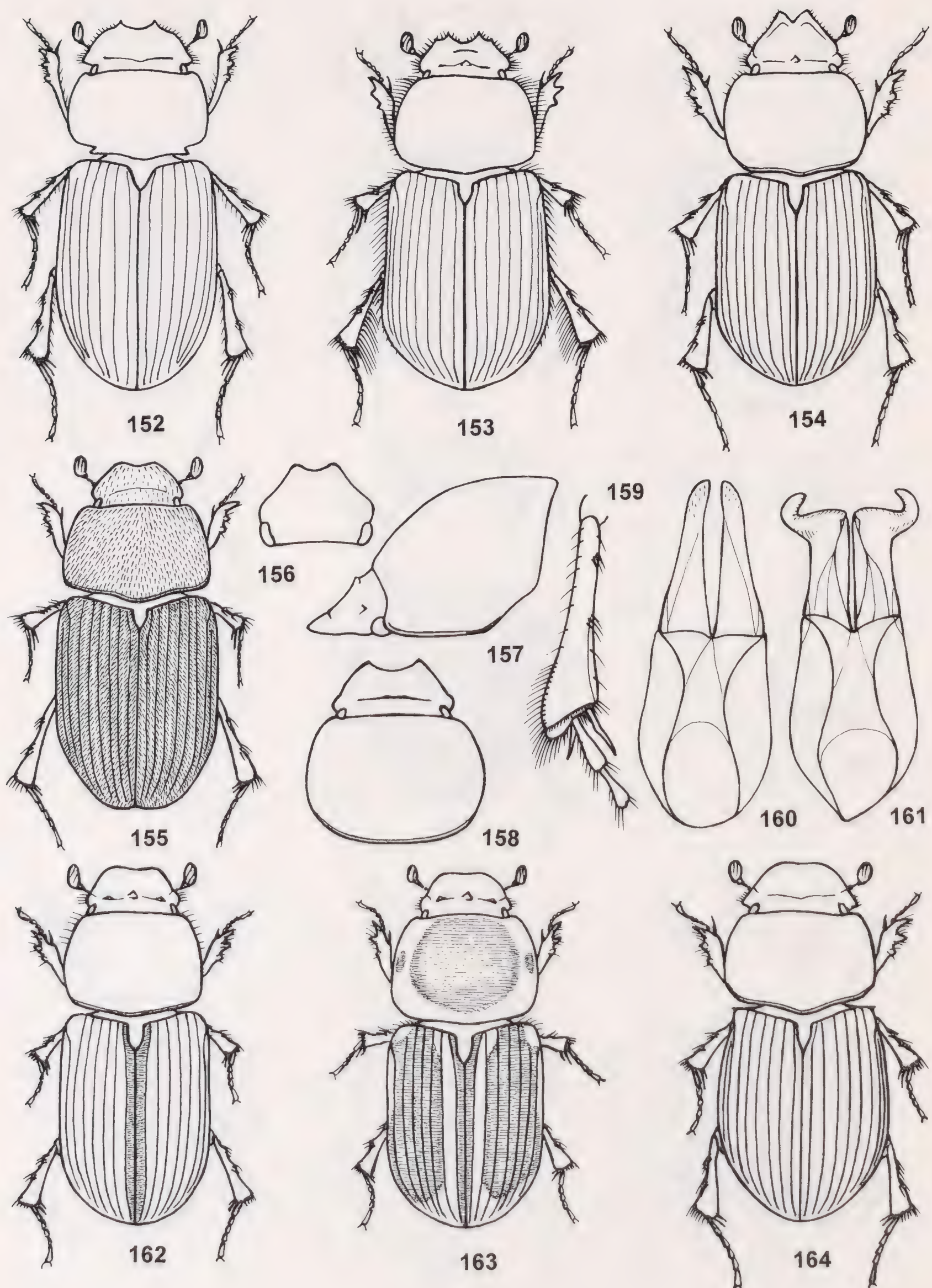
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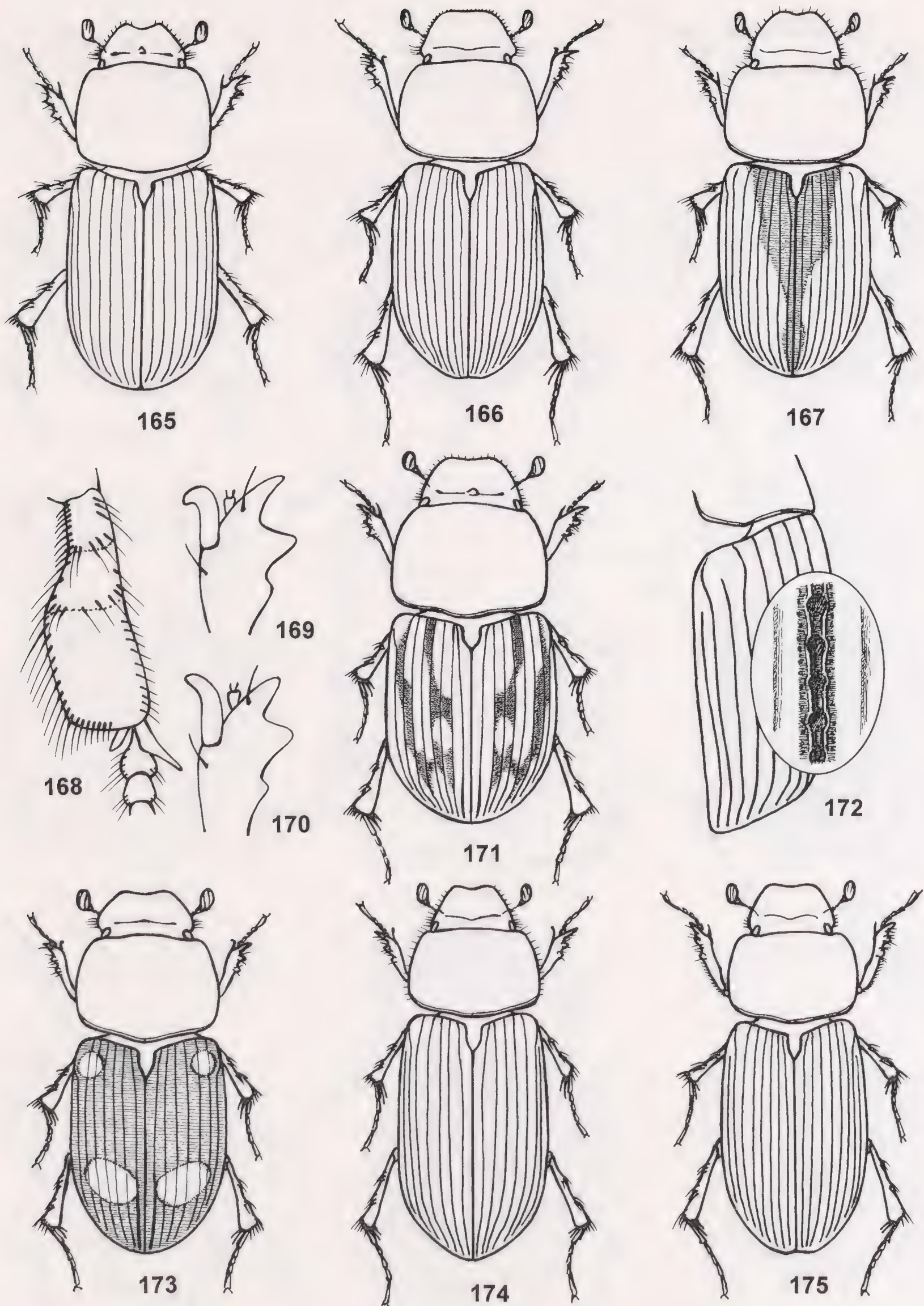
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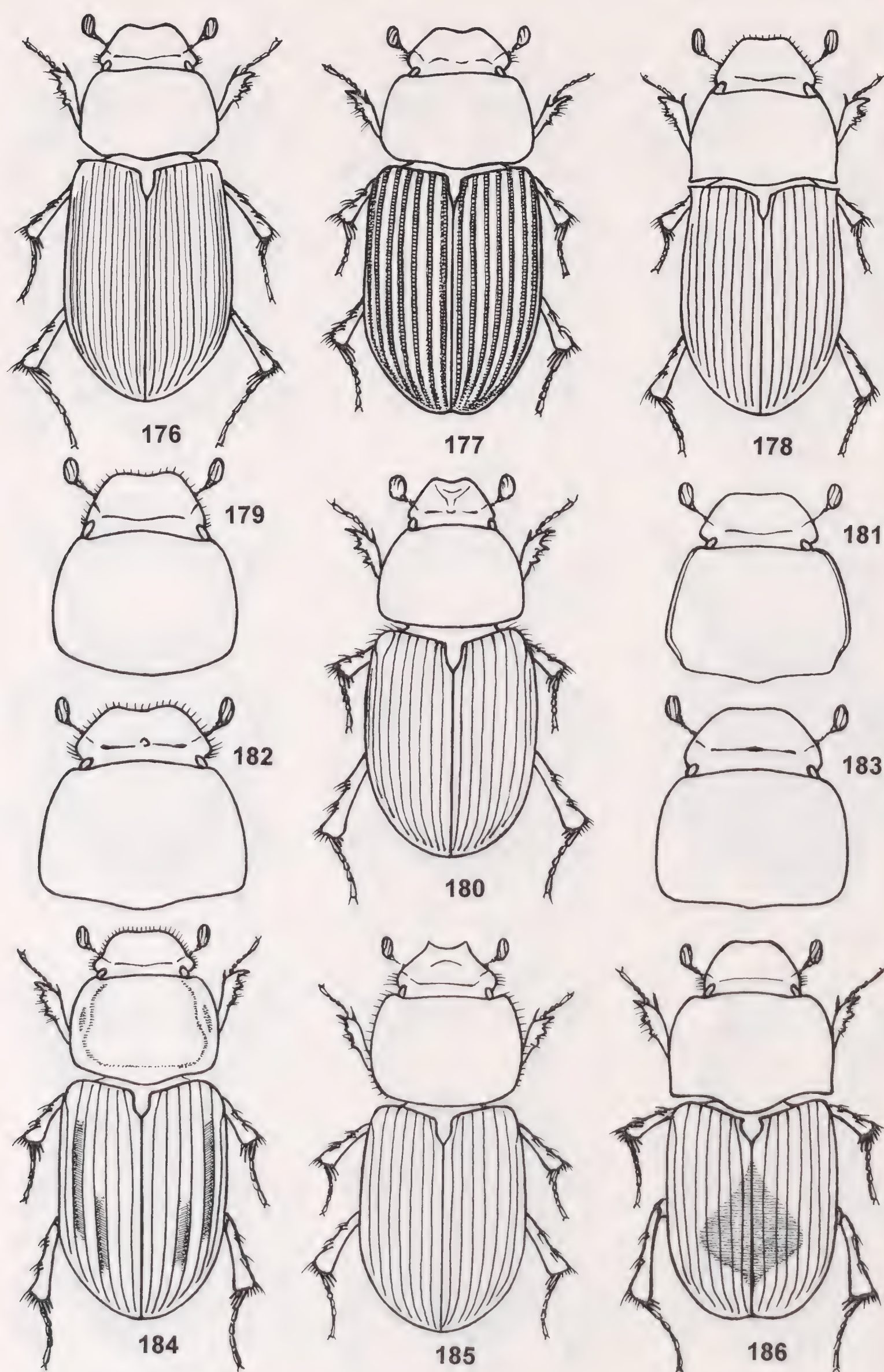
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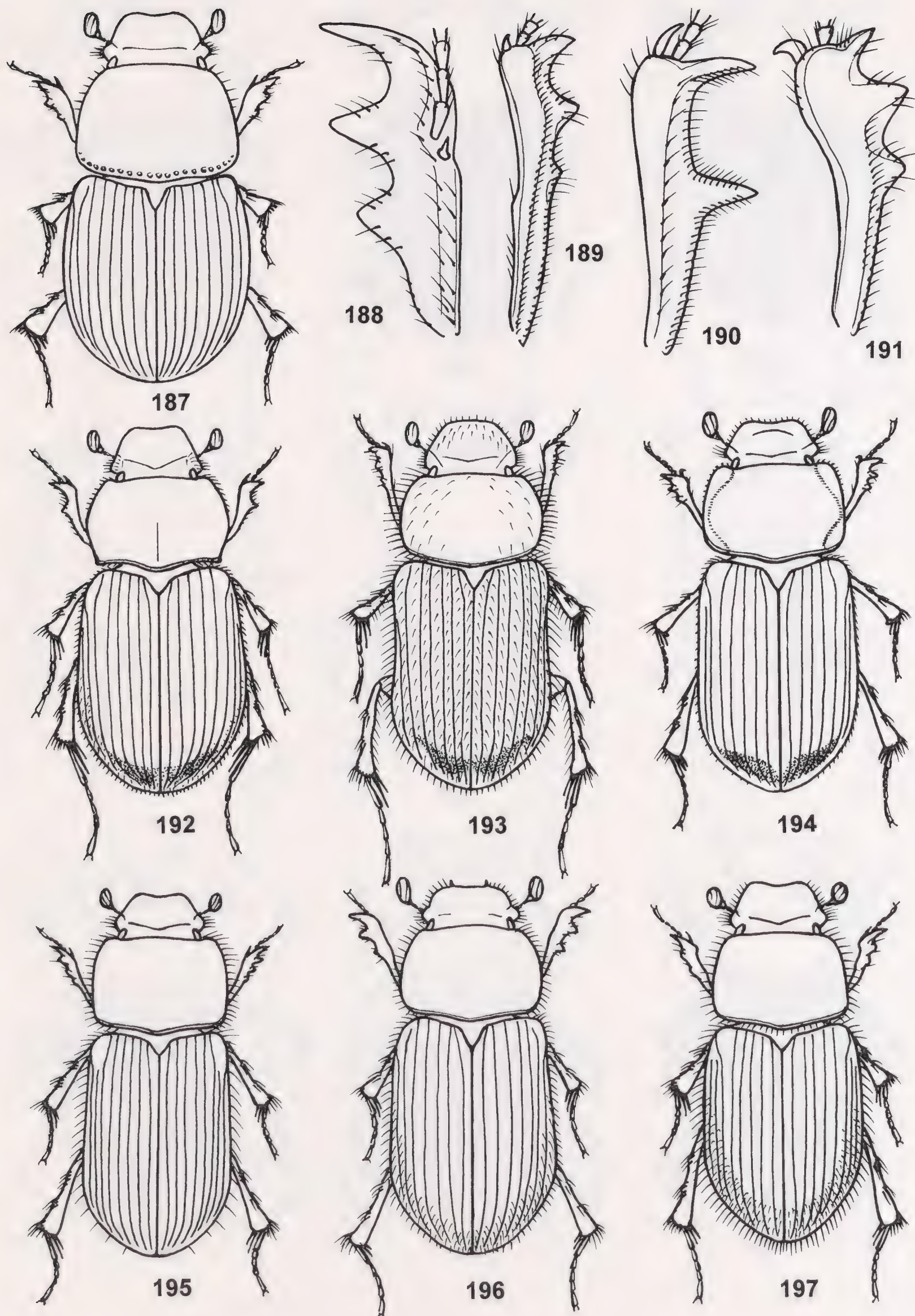
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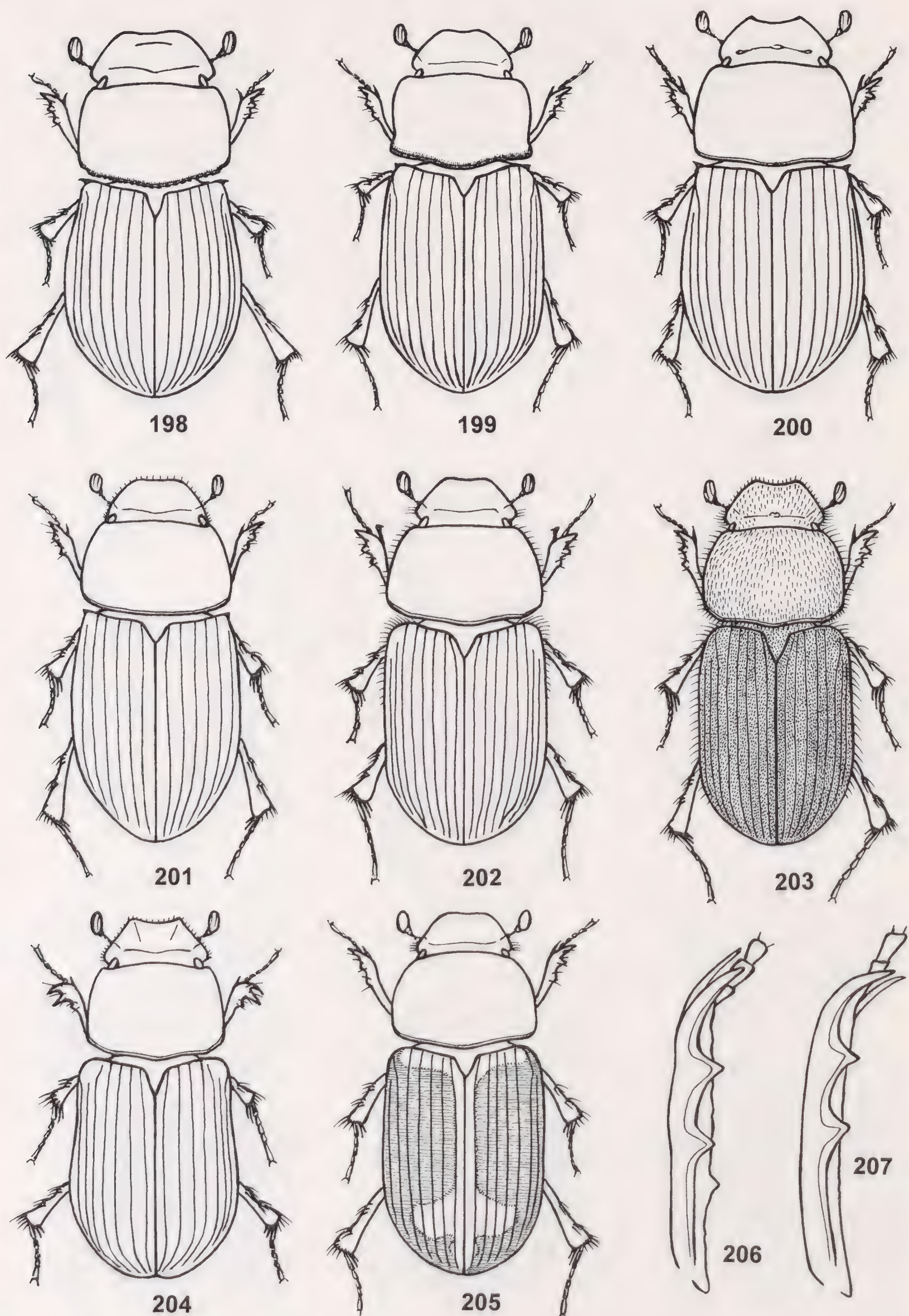
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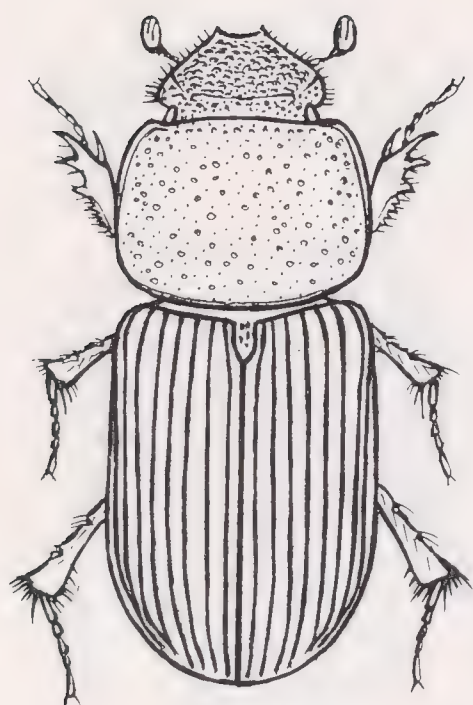
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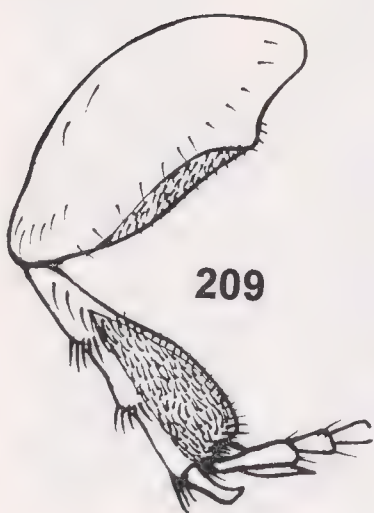
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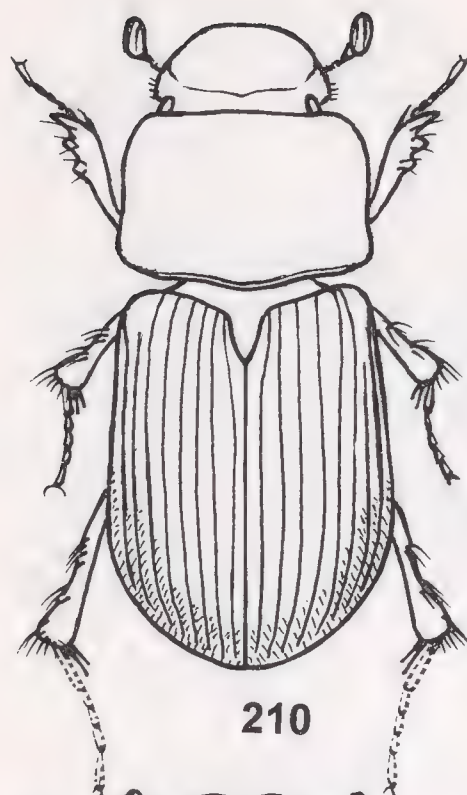
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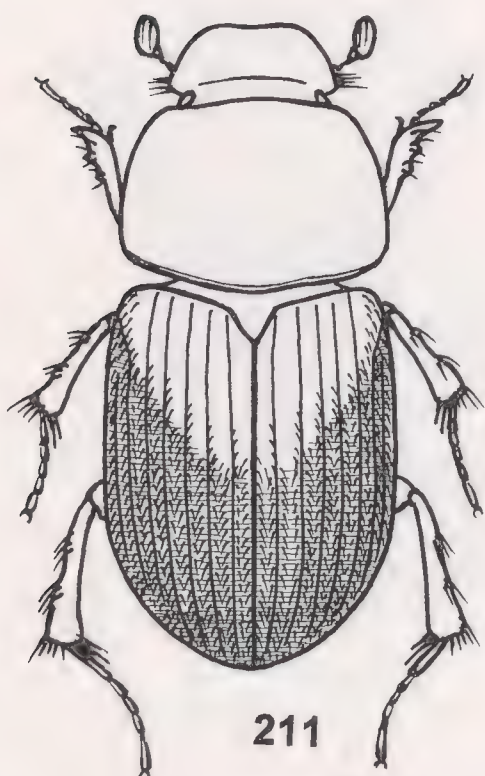
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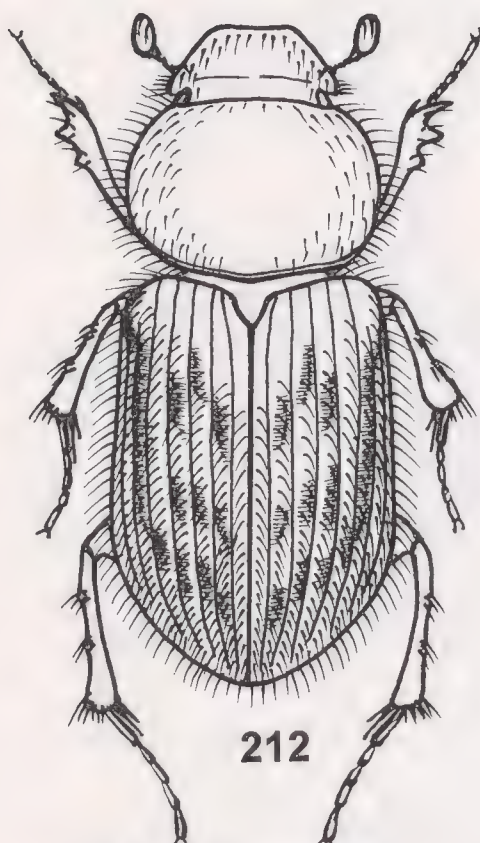
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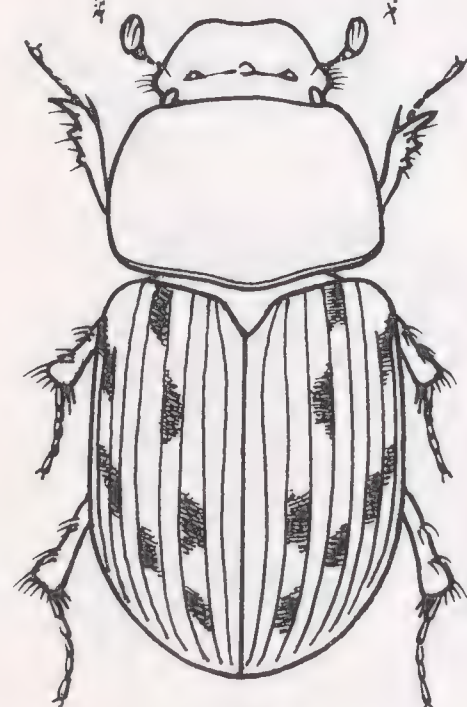
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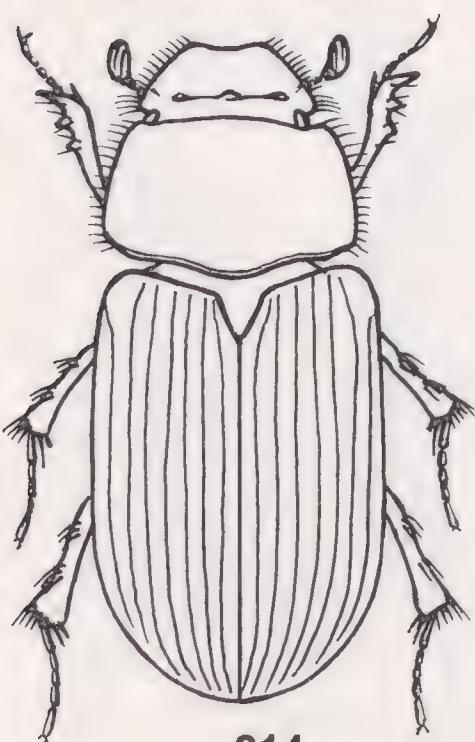
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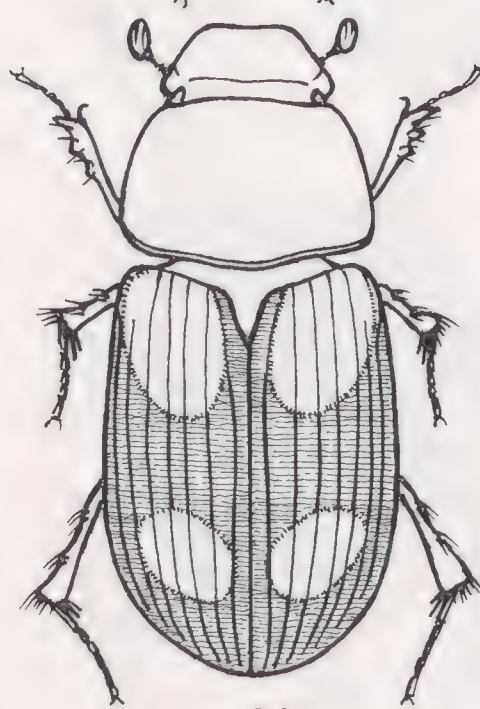
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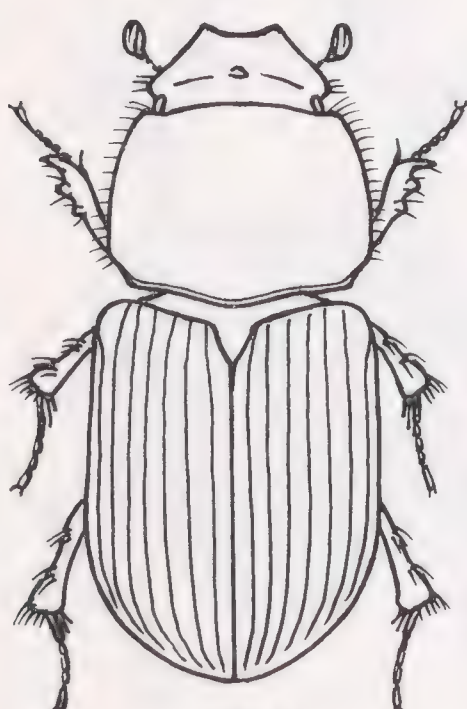
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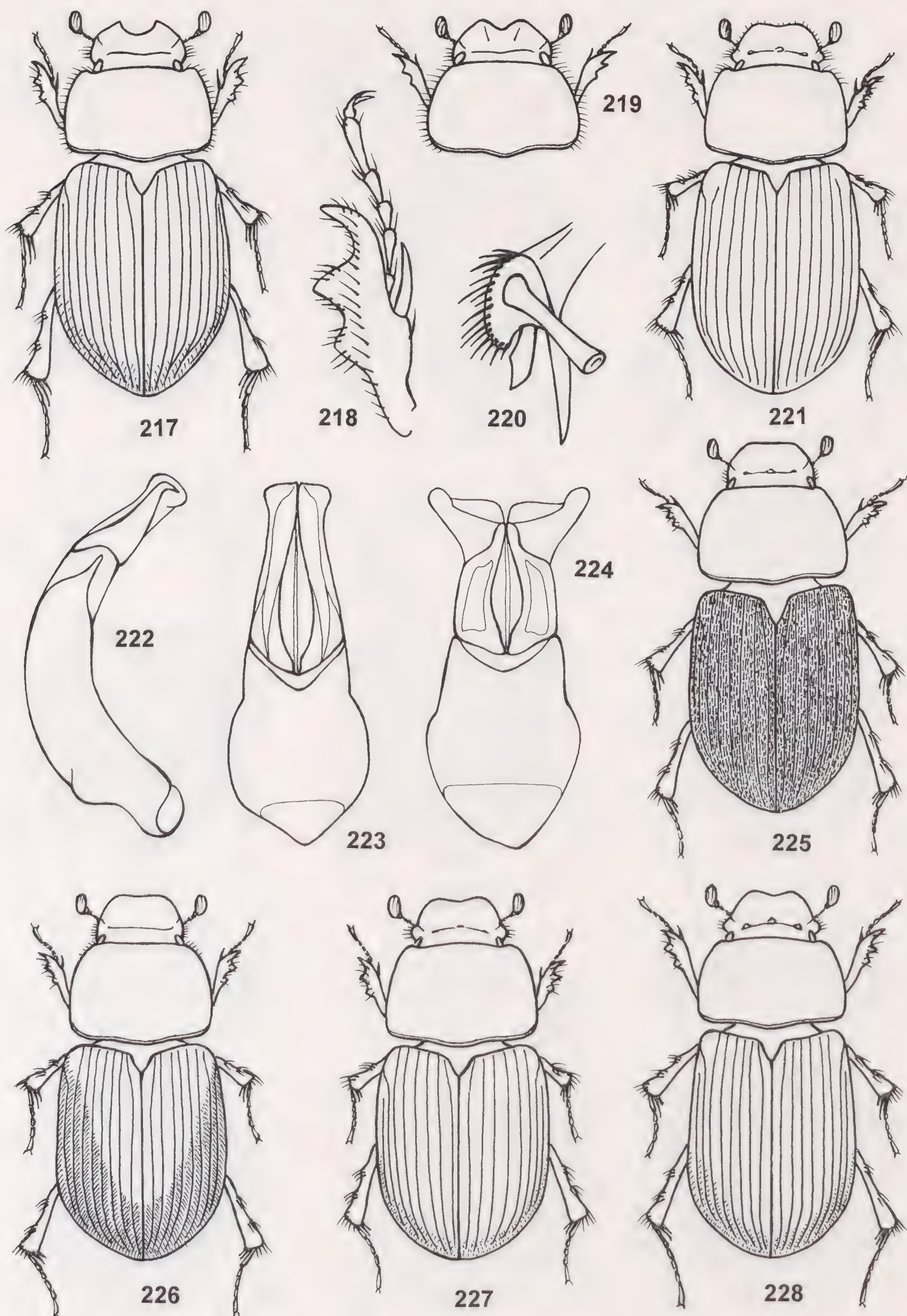


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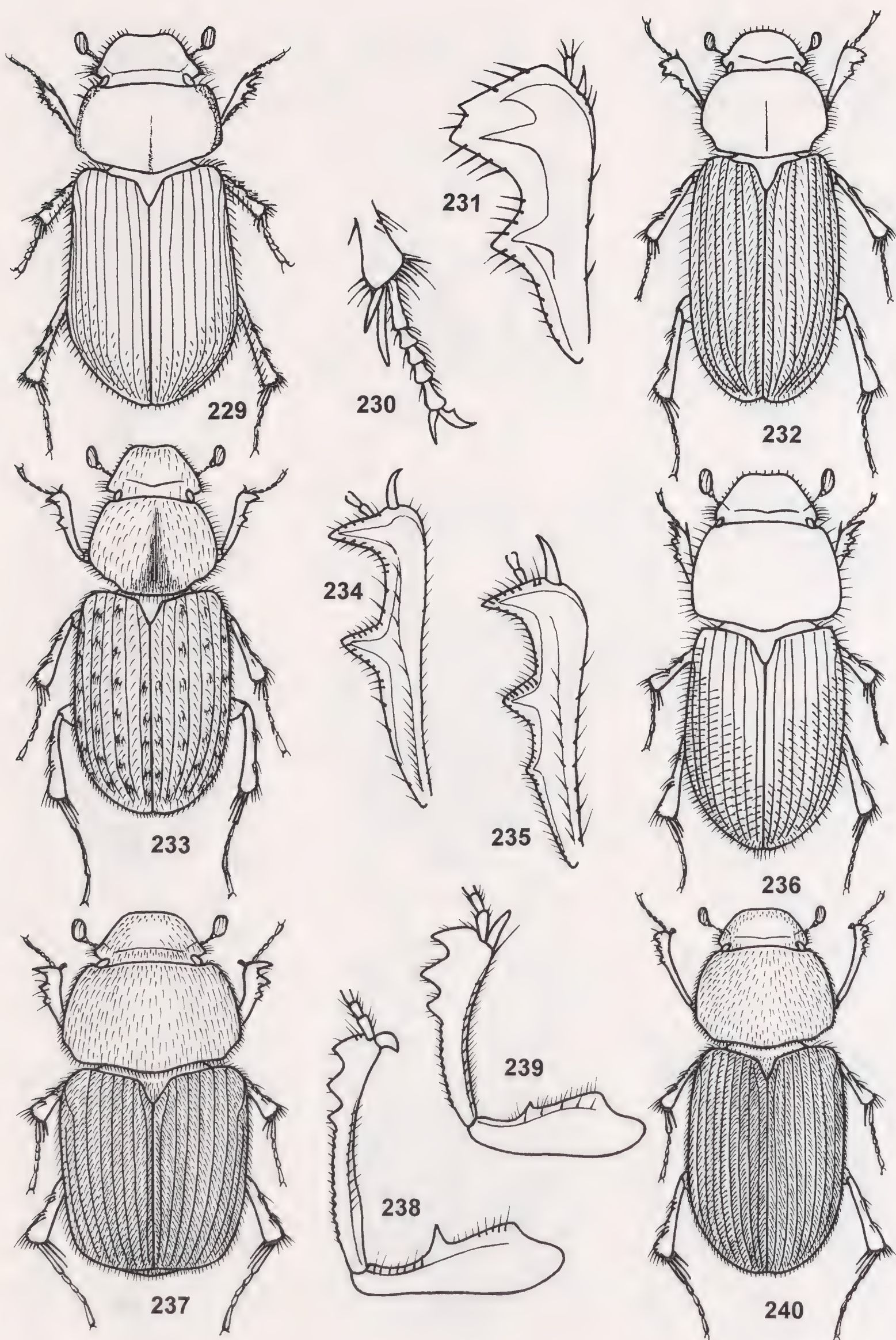


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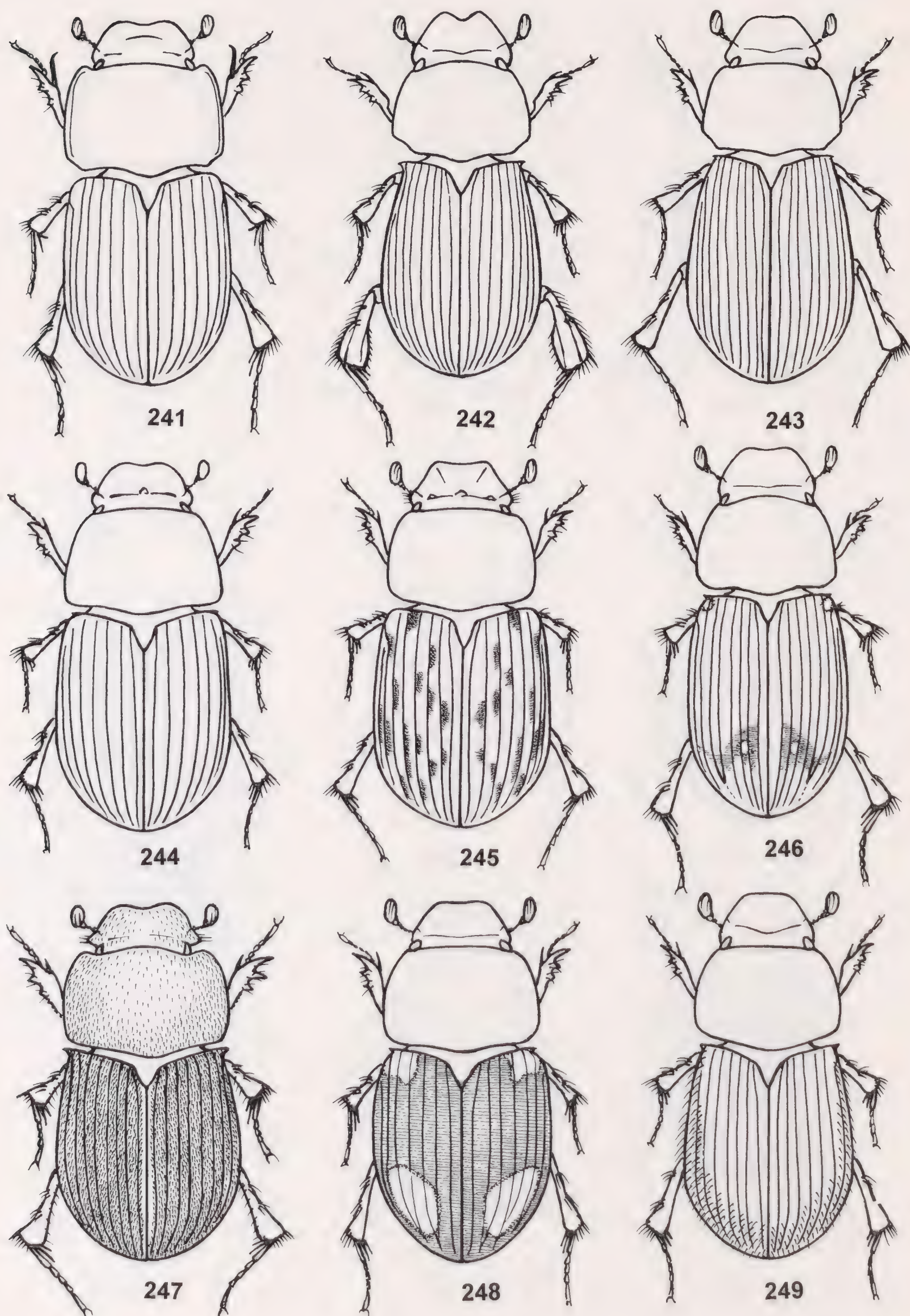
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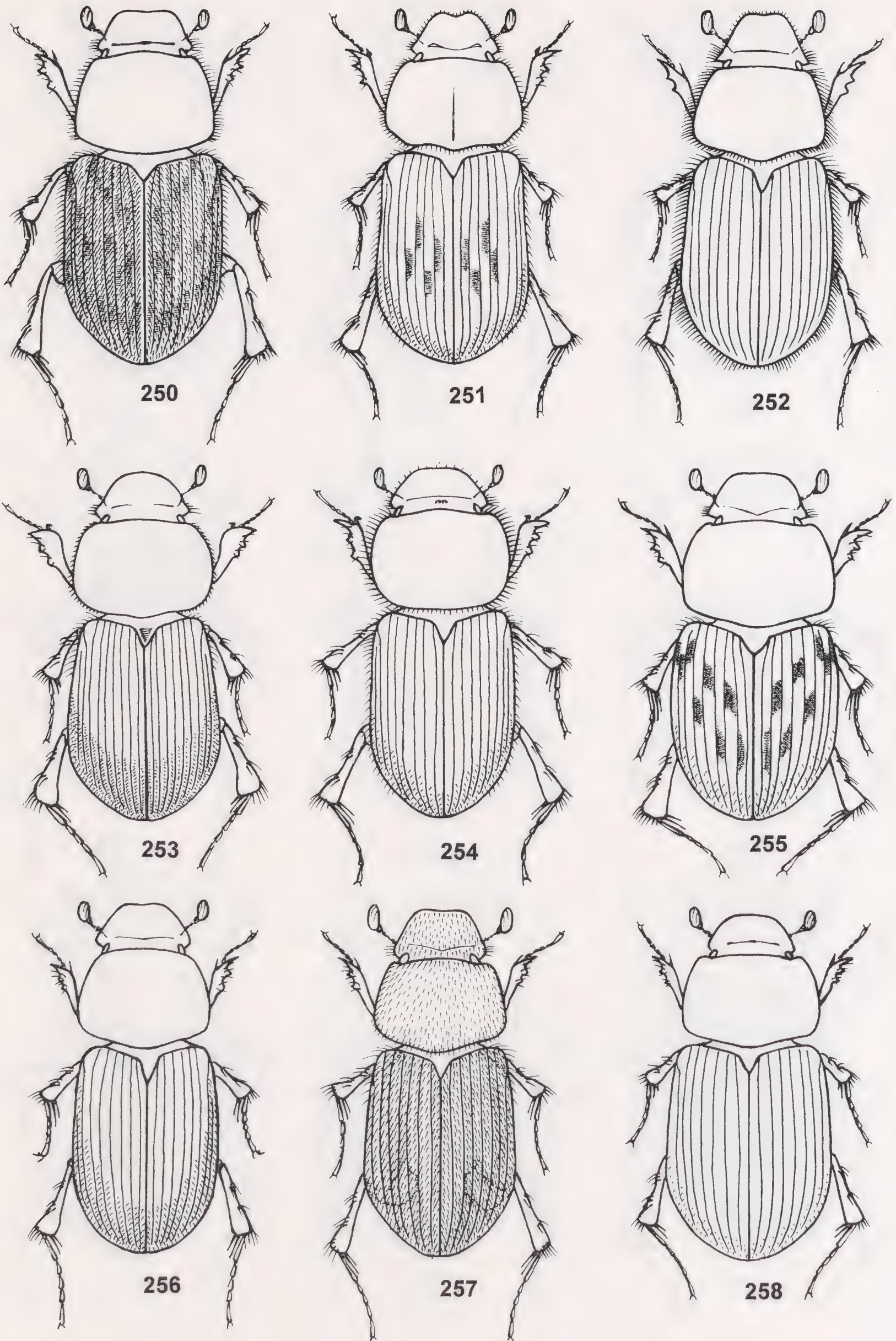
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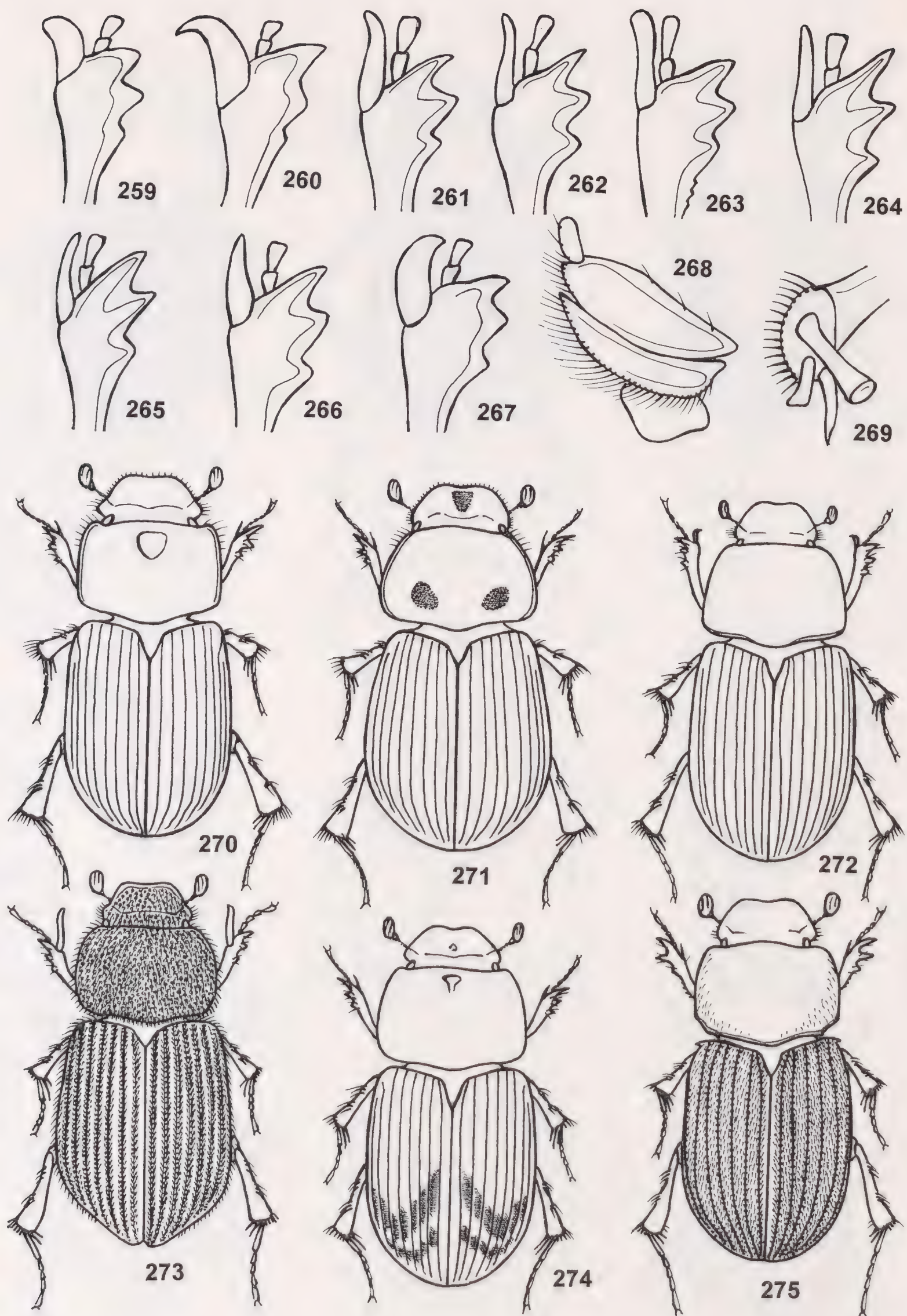
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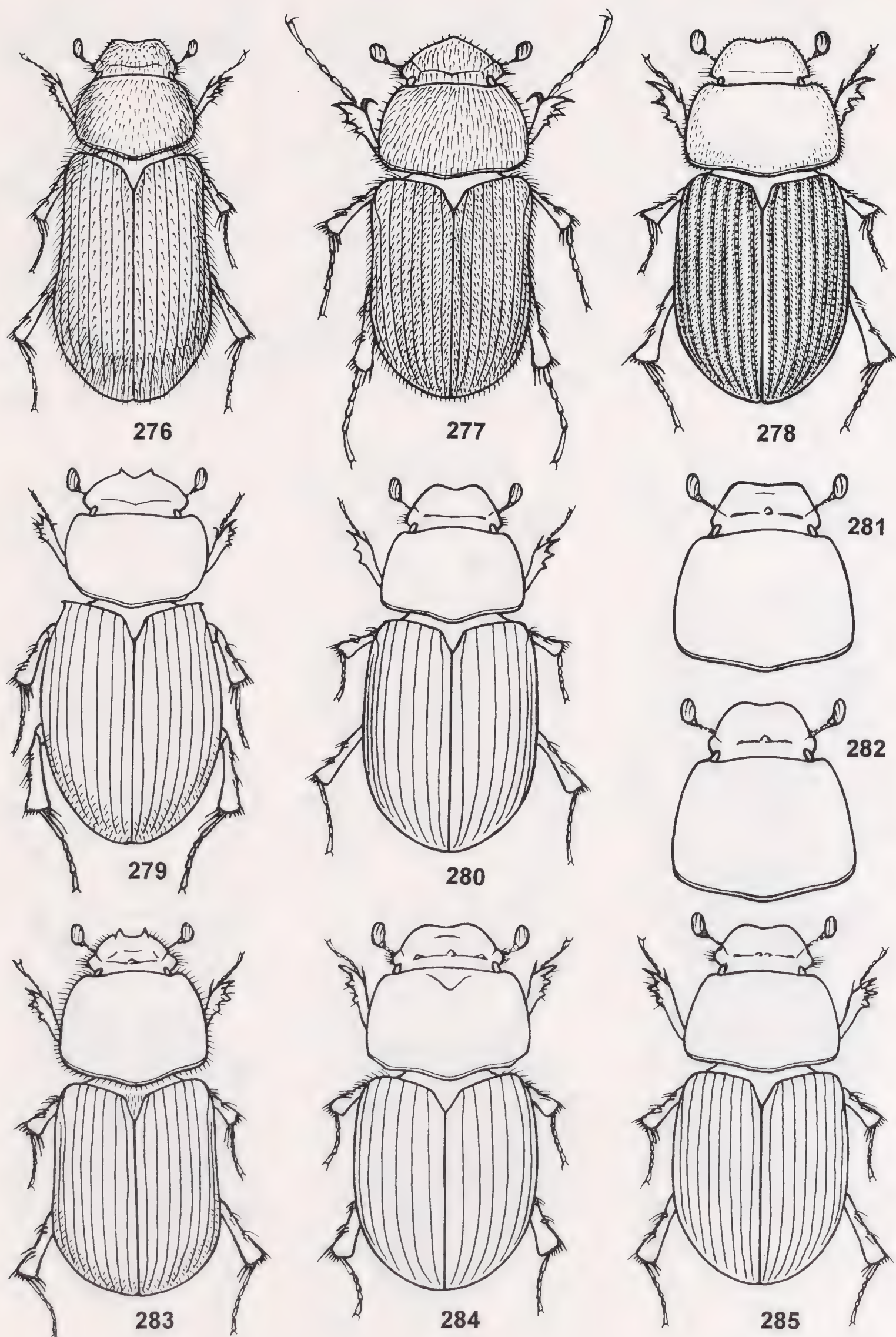
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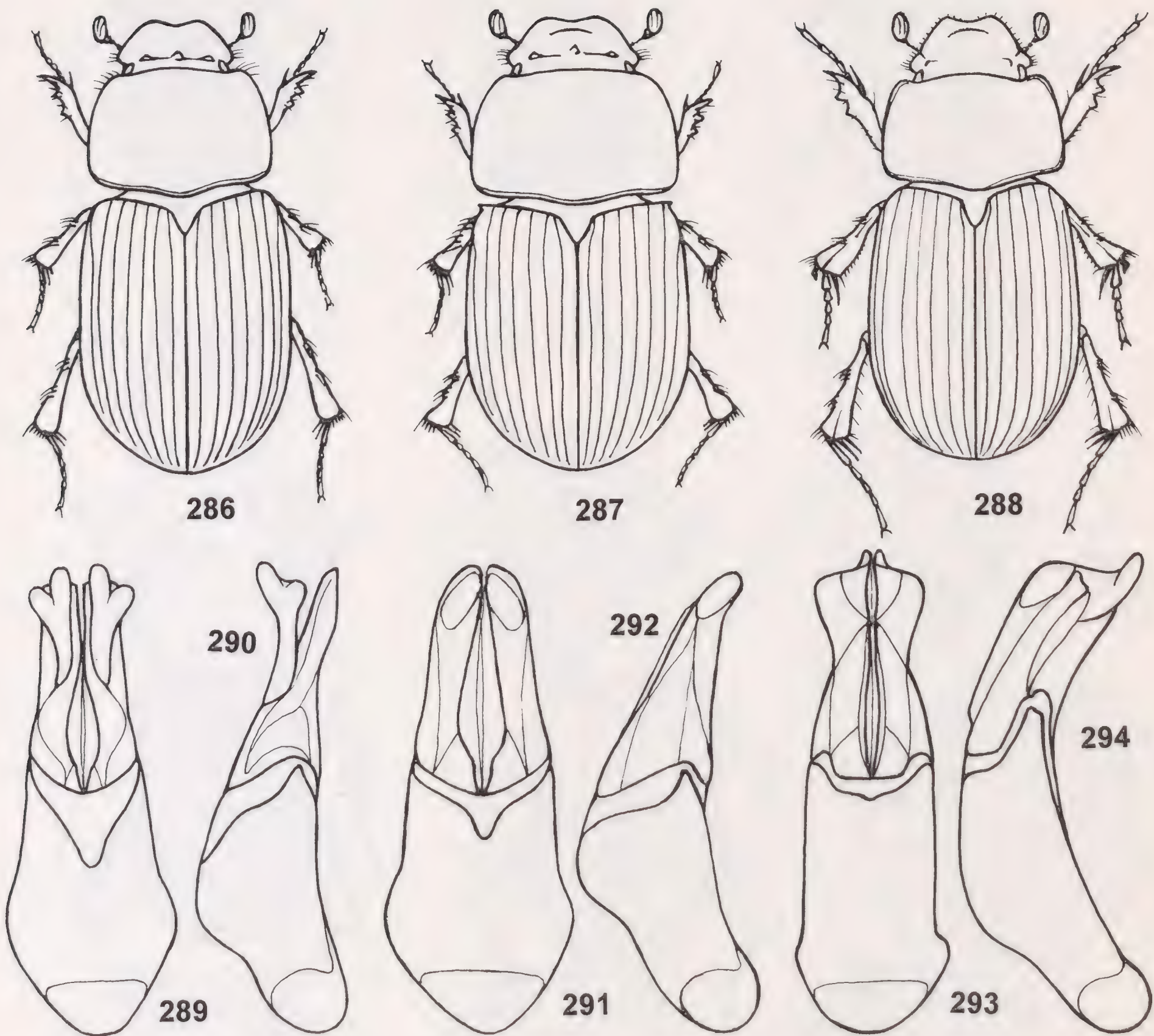
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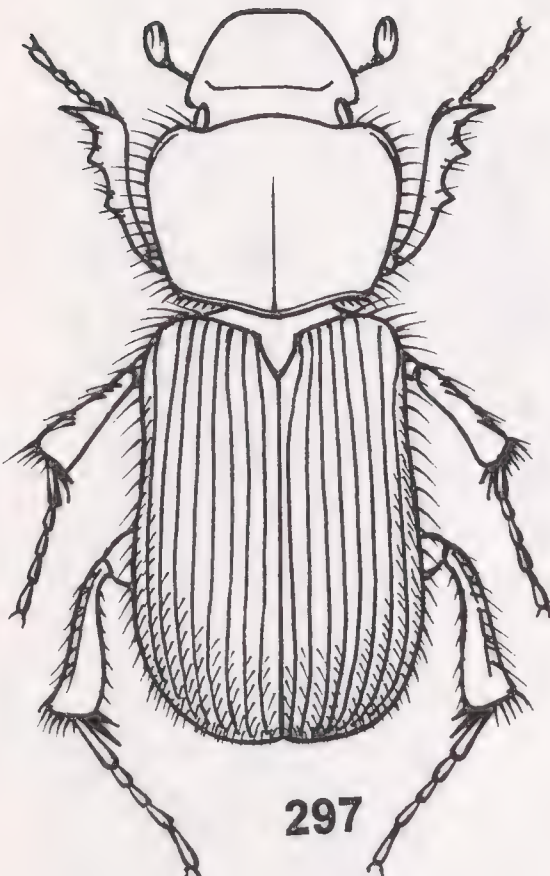
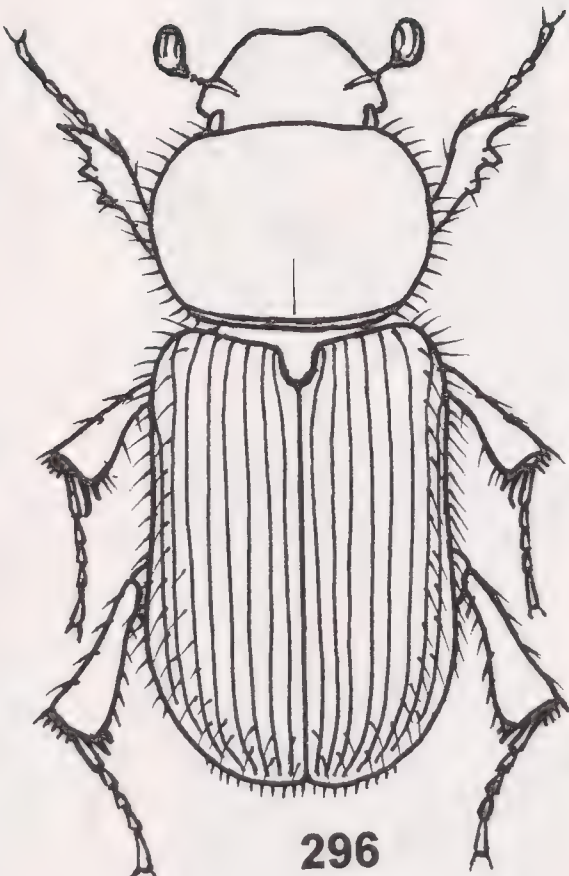
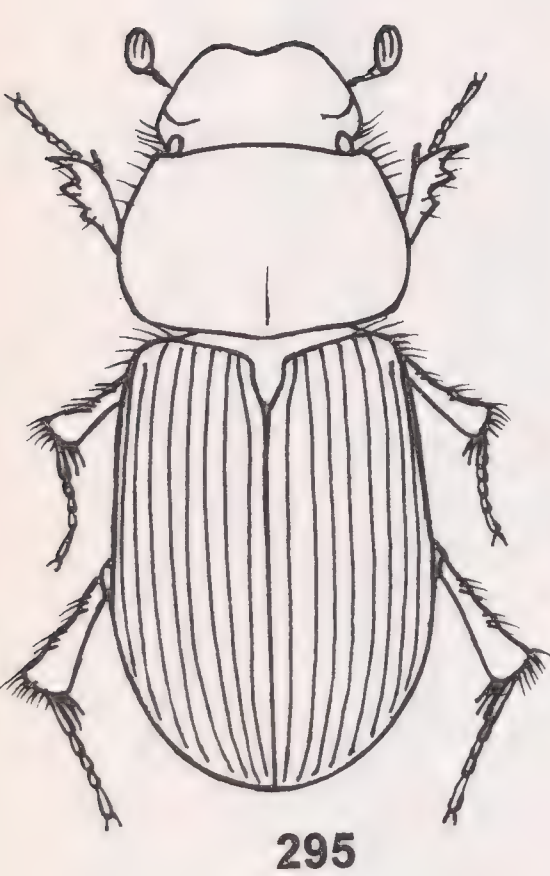
Figs 259-275: 259 - fore tibia apical spur of *Neagolius heydeni*; 260 - *falcispinis*, idem; 261 - *schlumbergeri*, idem; 262 - *montivagus*, idem; 263 - *limbolarius*, idem; 264 - *montanus*, idem; 265 - *penninus*, idem; 266 - *amblyodon*, idem; 267 - *pollicatus*, idem; 268 - male labial palp of *Trichaphodioides* (ventral view); 269 - left mesotibia apical spurs of *Agoliinus* male; 270 - *Paradeloparius*, habitus; 271 - *Adeloparius*, idem; 272 - *Neagolius*, idem; 273 - *Obaphodius*, idem; 274 - *Trichaphodiellus*, idem; 275 - *Trichonotuloides*, idem.



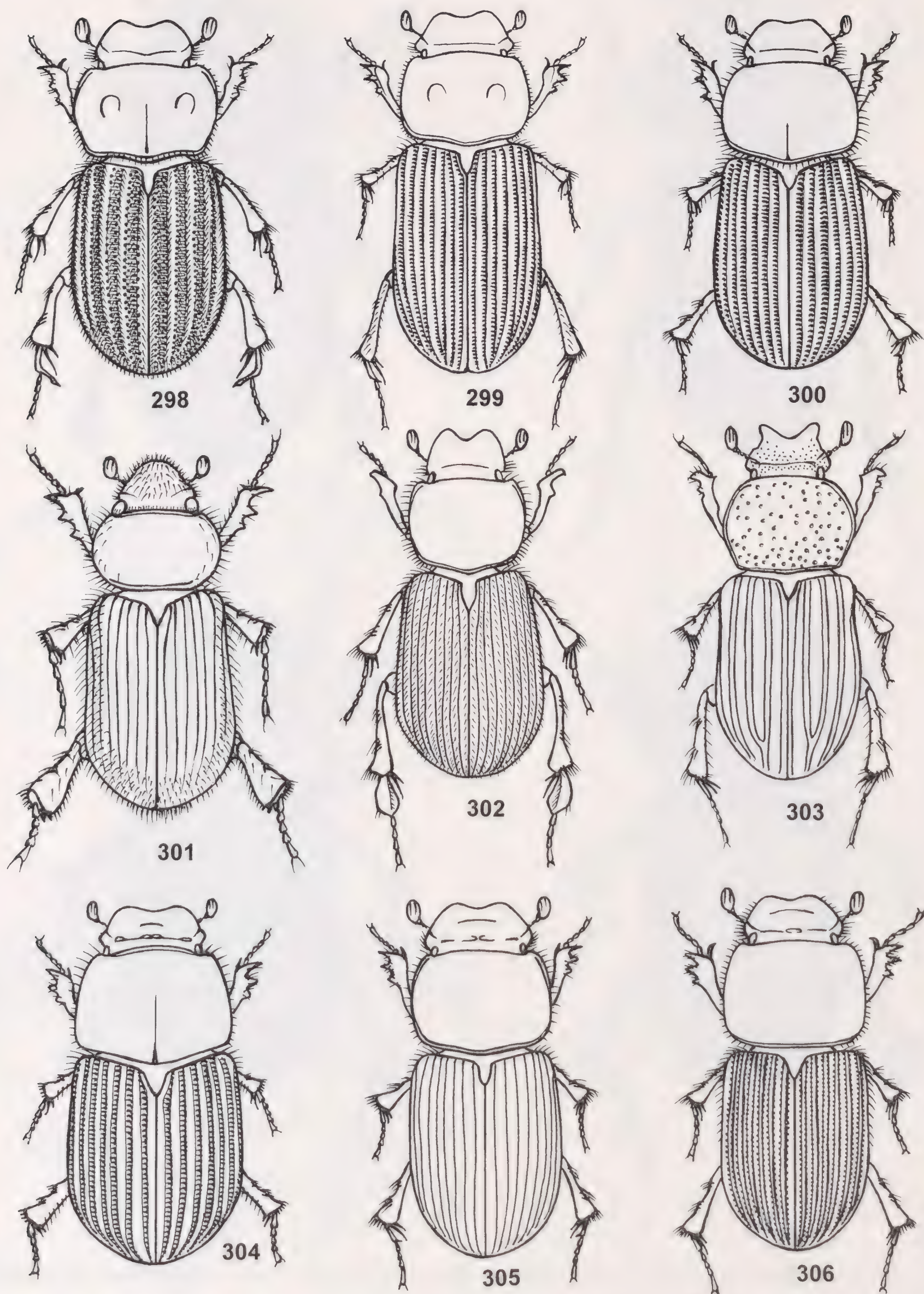
Figs 276-285: 276 - *Longaphodius*, habitus; 277 - *Oxycorythus*, idem; 278 - *Oxyaphodius*, idem; 279 - *Stenotothorax*; idem; 280 - *Planolinus* (uliginosus group), idem; 281 - head and pronotum of *Planolinus* (borealis group); 282 - idem of *Planolinus* (vittatus group); 283 - *Allobodilus*, habitus; 284 - *Aphodius*, idem; 285 - *Tristaphodius*, idem.



Figs 286-294: 286 - *Agoliinus*, habitus; 287 - *Agrilinus*, idem; 288 - *Qingaphodius*, idem; 289-290 - aedeagus (dorsal and lateral view) of *Agoliinus congregatus*; 291-292 - idem of *Agrilinus ater*; 293-294 - idem of *Qingaphodius nikodymi*.



Figs 295-297. Habitus of Didactyliini: Fig. 295 - *Aidophus*; 296 - *Trigonoscelus*; 297 - *Didactylia*



Figs 298-306. Habitus of Didactyliini: Fig. 298 - *Drepanocanthus*; 299 - *Pseudodrepanocanthus*; 300 - *Pseudoxymus*; 301 - *Pseudomothon*; 302 - *Coptochirus*; 303 - *Goiginus*; 304 - *Proctophanes*; 305 - *Australaphodius*; 306 - *Harmogaster*

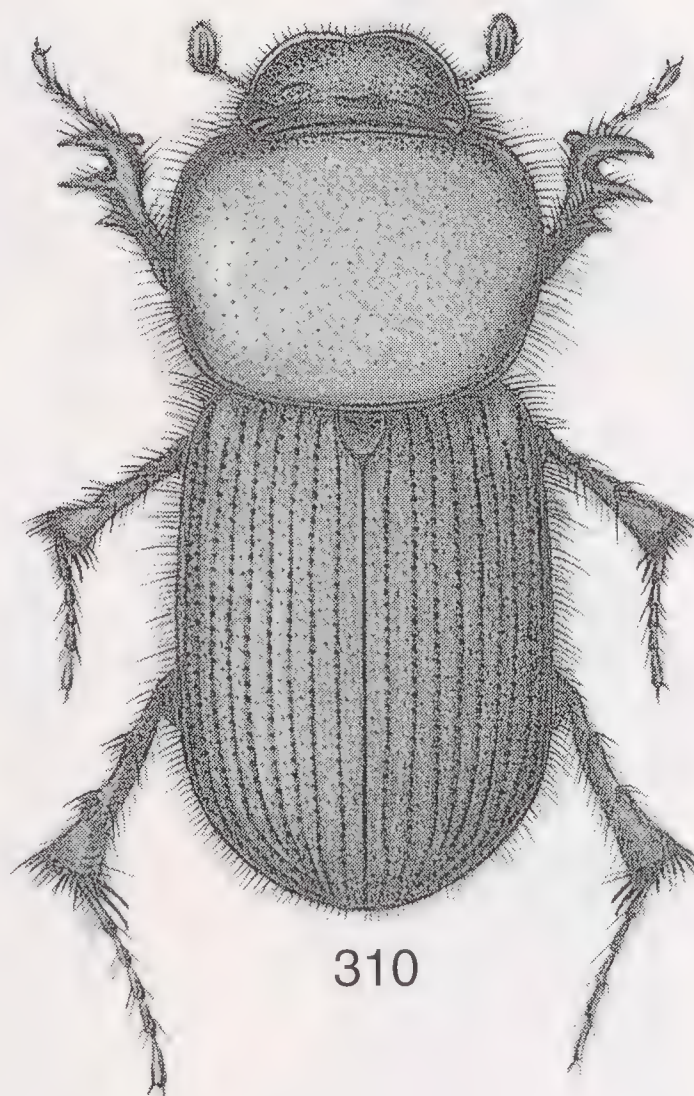
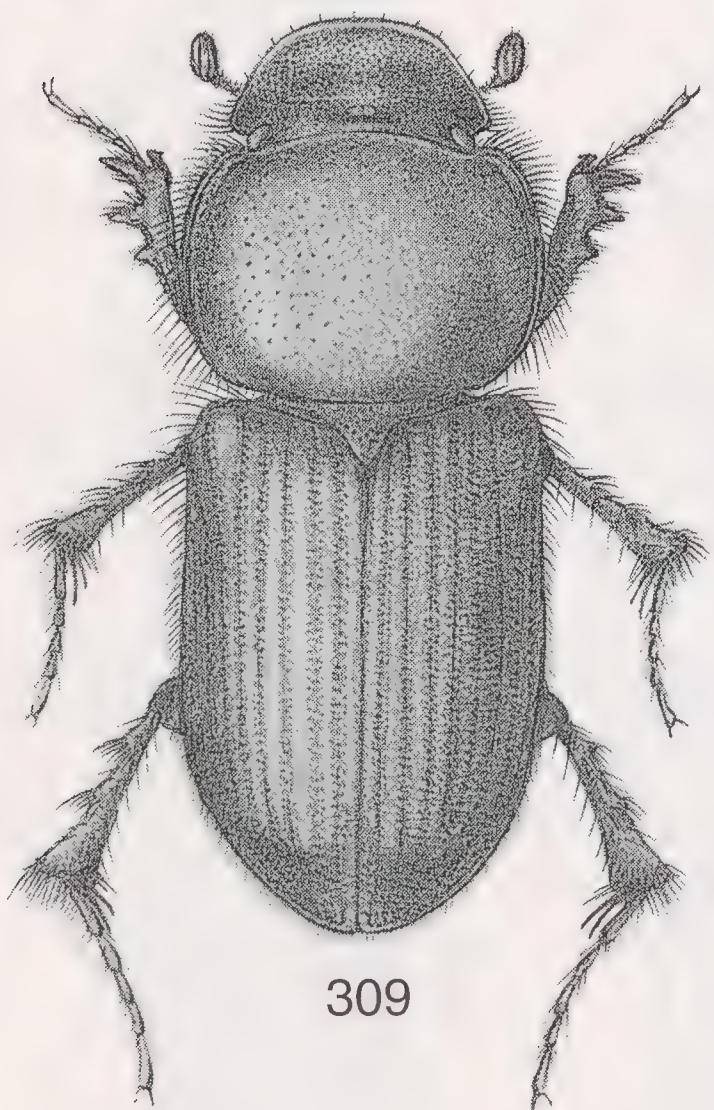
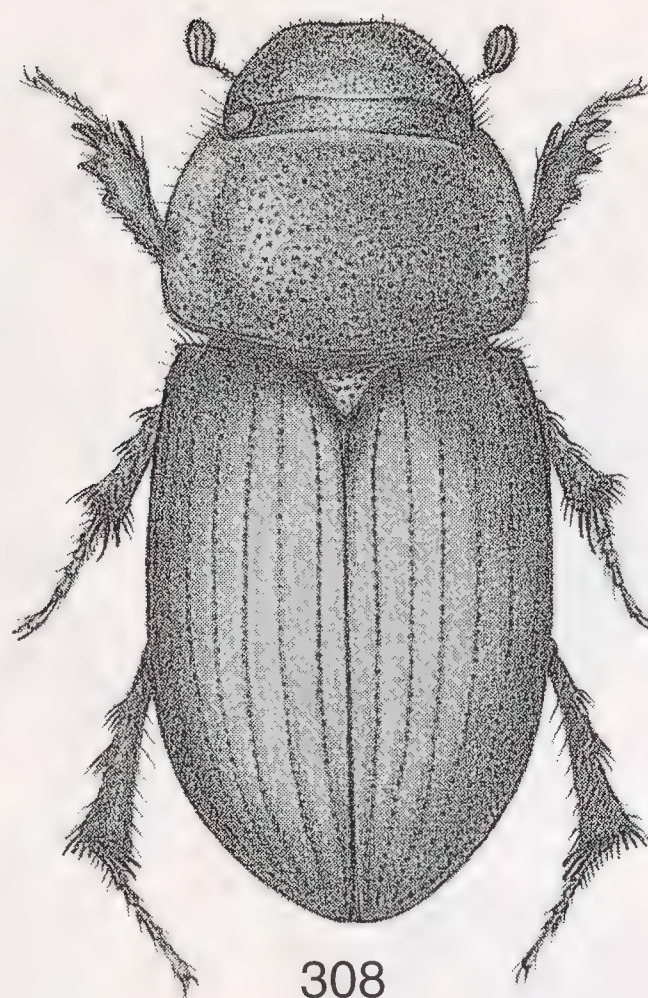
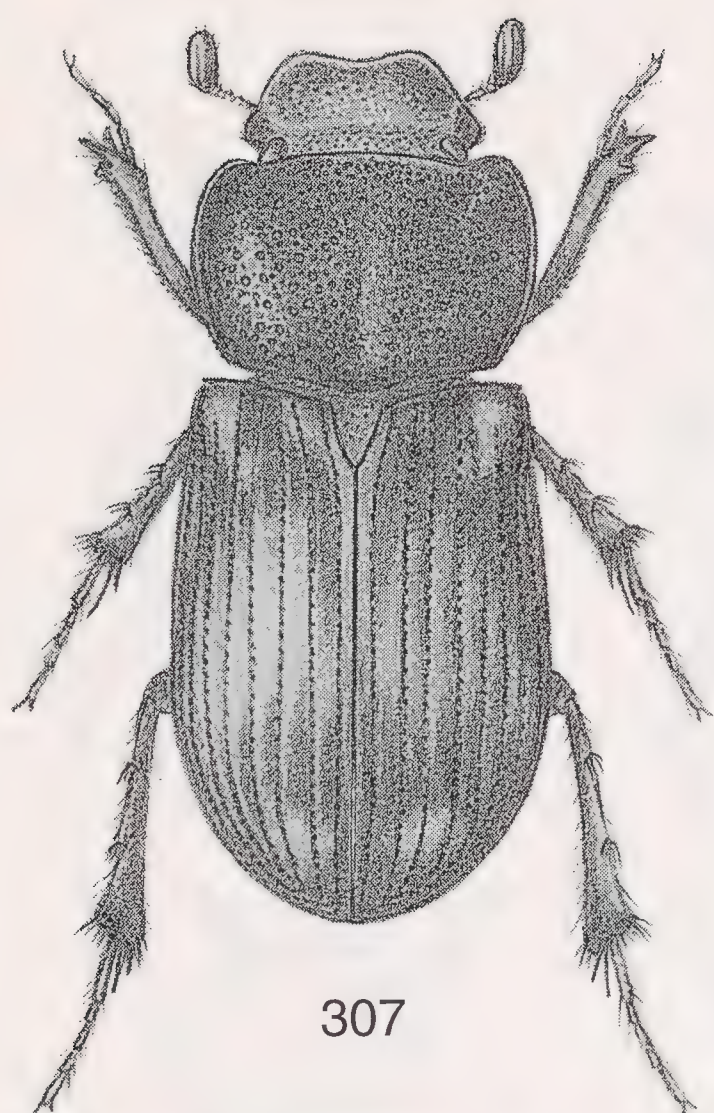
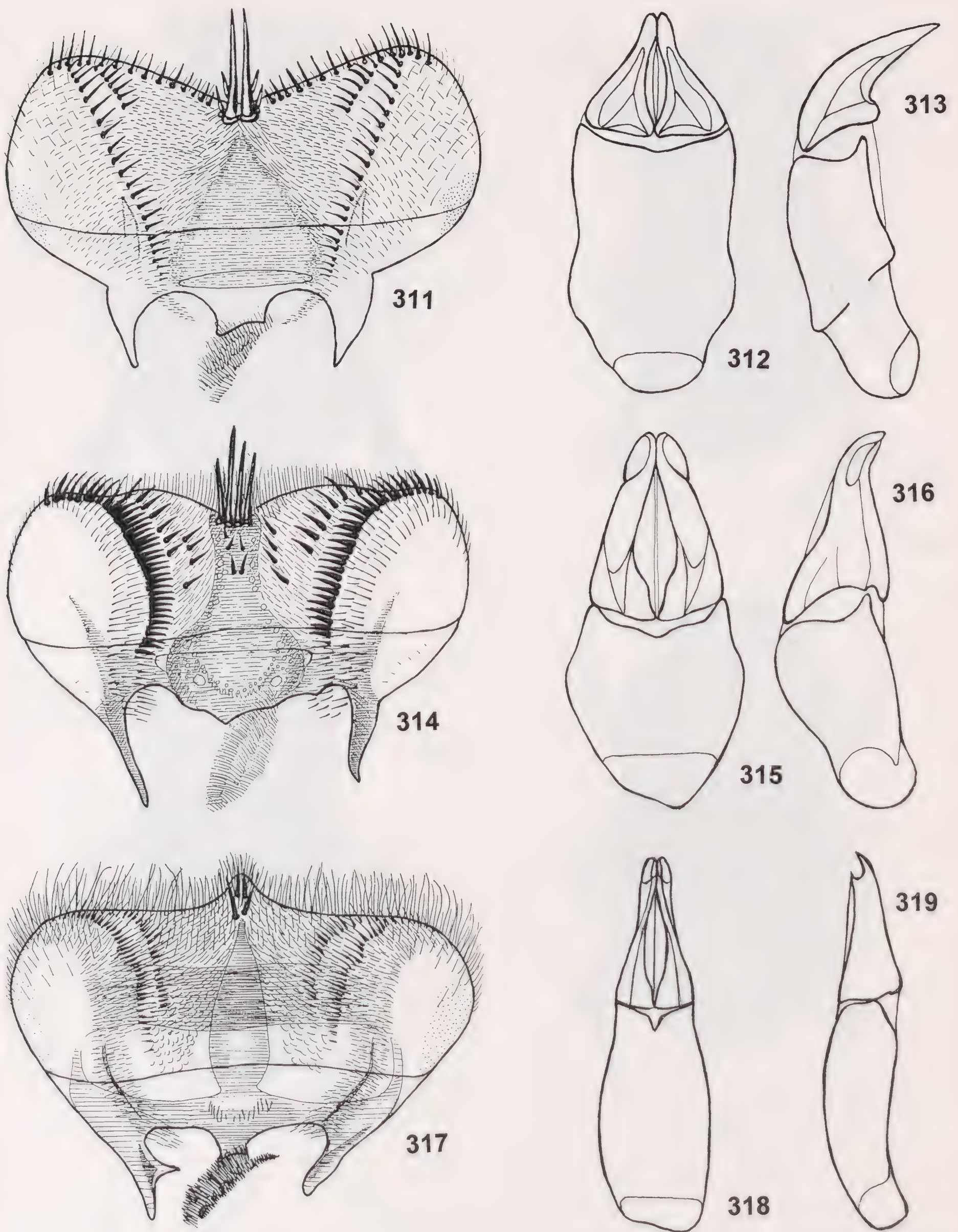


Fig. 307. *Acanthaphodius bruchi* A. Schmidt, 1909 (male; length 3 mm) (Argentina; Rio Negro, Prov. Neuquen, Lago Lacar, San Martin de los Andes)

Fig. 308. *Acanthobodilus immundus* (Creutzer, 1799) (male; length 6 mm) (Italy; Calabria, Reggio di Calabria, Foce Fiume Petrace)

Fig. 309. *Acrossidius tasmaniae* (Hope, 1846) (male; length 14 mm) (South Australia; Torret Range)

Fig. 310. *Acrossoides yorkensis* (Blackburn, 1892) (male, length 14 mm) (South Australia; Yorktown, York peninsula)



Figs 311-319. Epipharynx and aedeagus, dorsal and lateral view, of: 311-313 - *Acanthaphodius bruchi* A. Schmidt, 1909; 314-316 - *Acanthobodilus immundus* (Creutzer, 1799); 317-319 - *Acrossidius tasmaniae* (Hope, 1846)

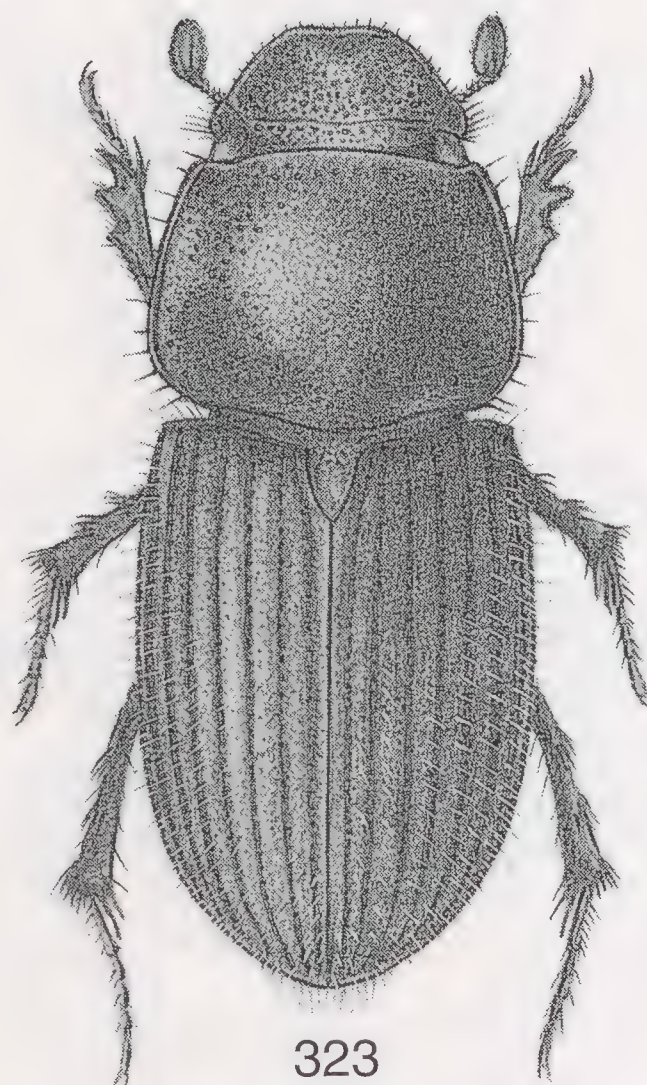
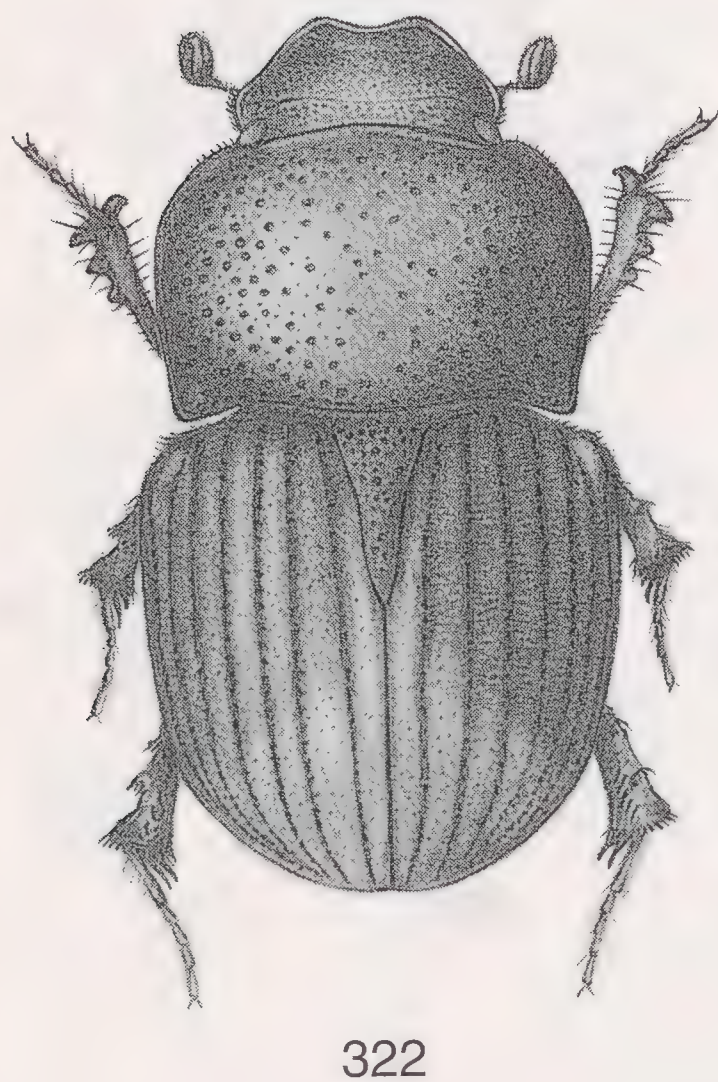
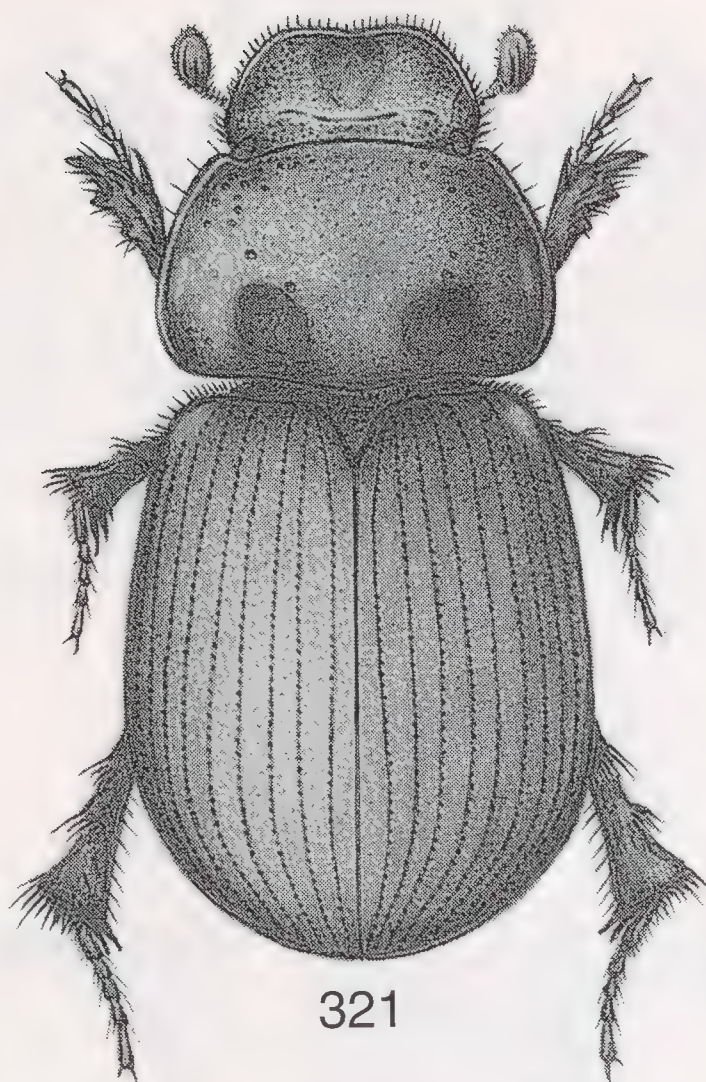
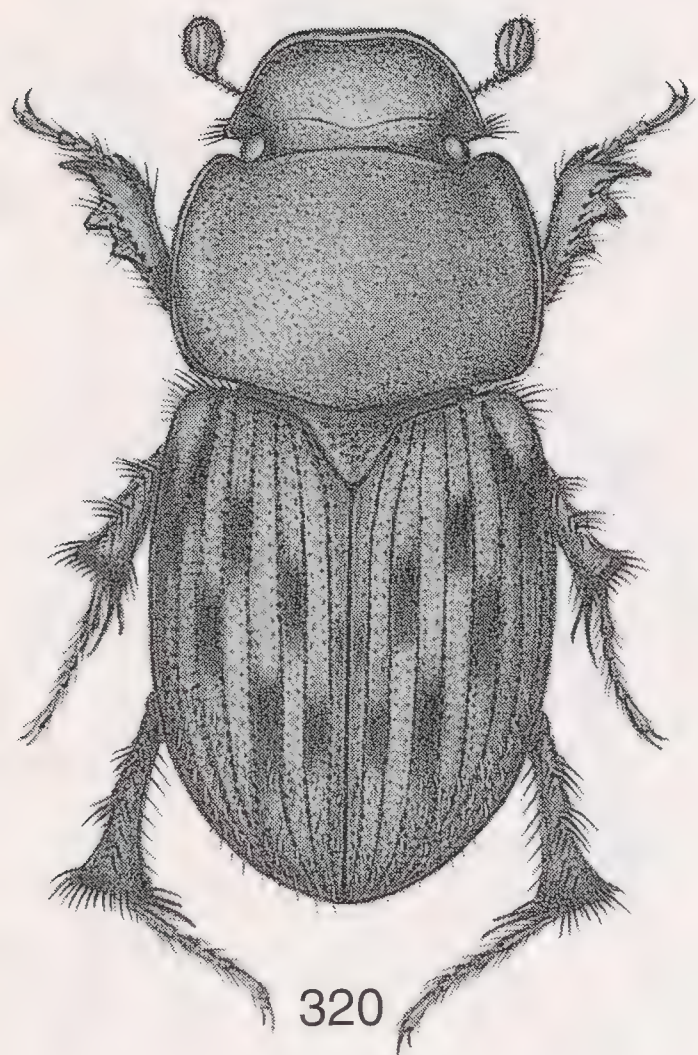
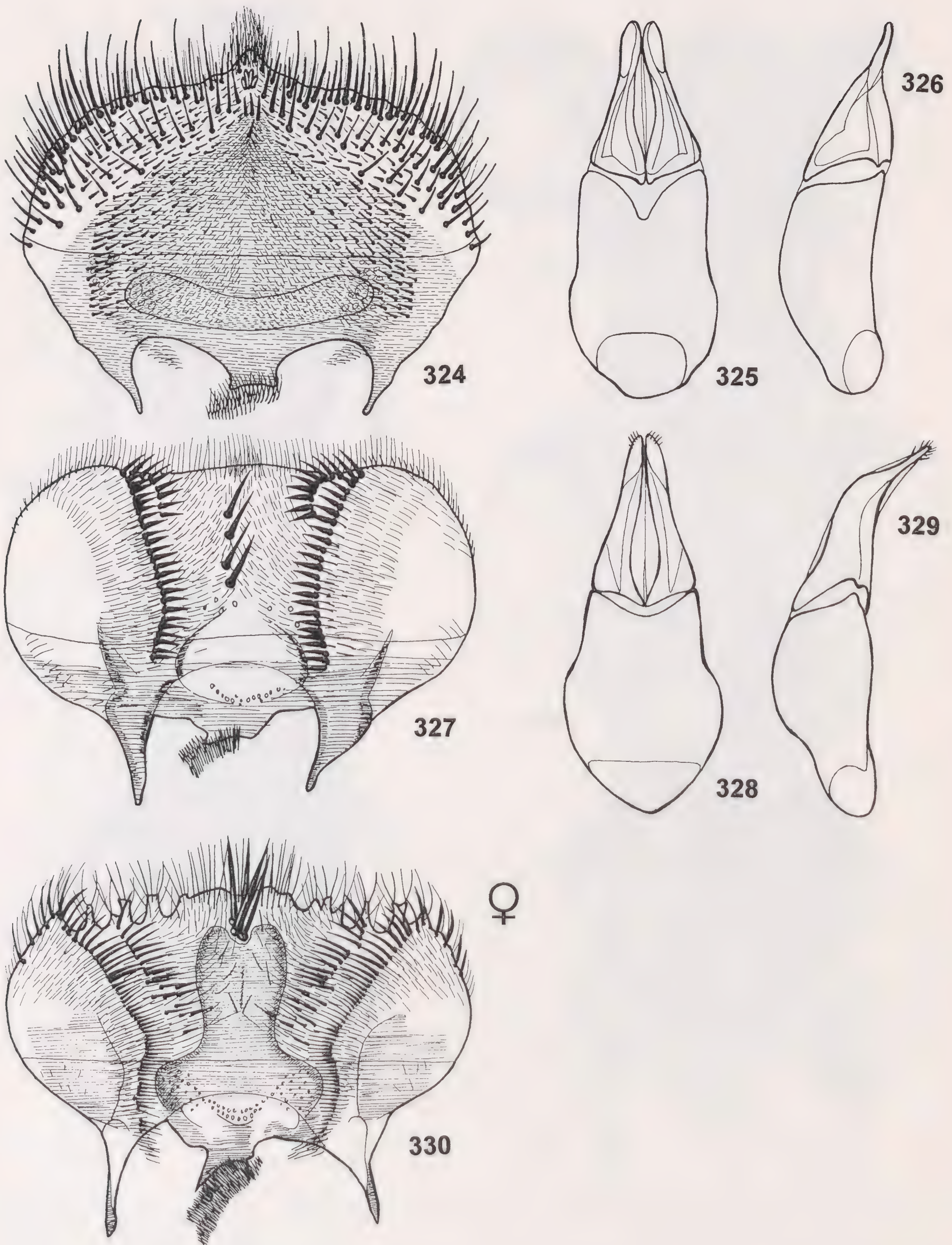


Fig. 320. *Acrossus luridus* (Fabricius, 1775) (male, length 11 mm) (Italy; Calabria, Aspromonte, Portella Zagaria)

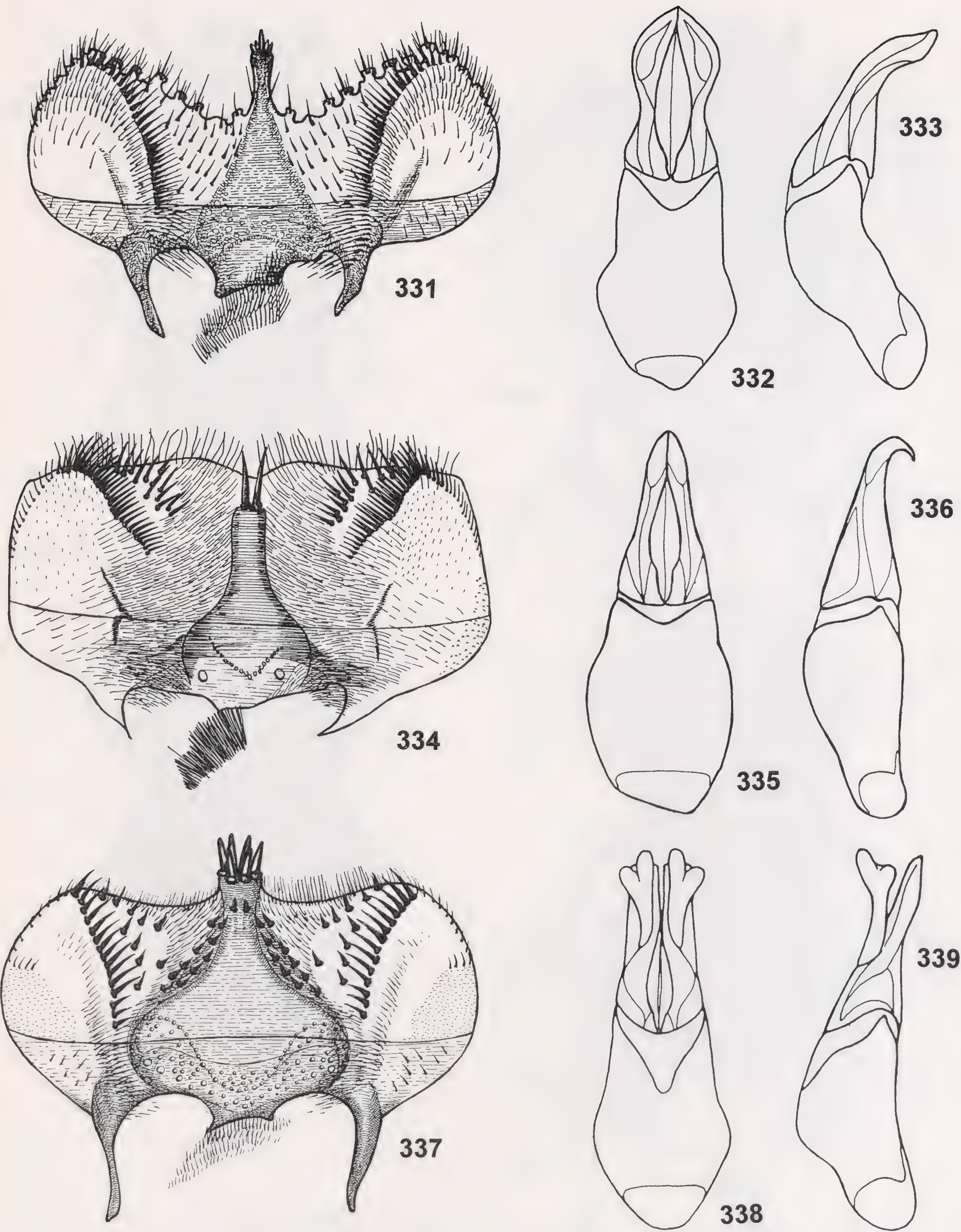
Fig. 321. *Adeloparius trimaculatus* (A. Schmidt, 1909) (female, length 13 mm) (Cameroon; Batanga)

Fig. 322. *Afrodiapterna heleninae* (G. Dellacasa, 1984) (male, length 5 mm) (Ivory Coast; Park Nat. Tai)

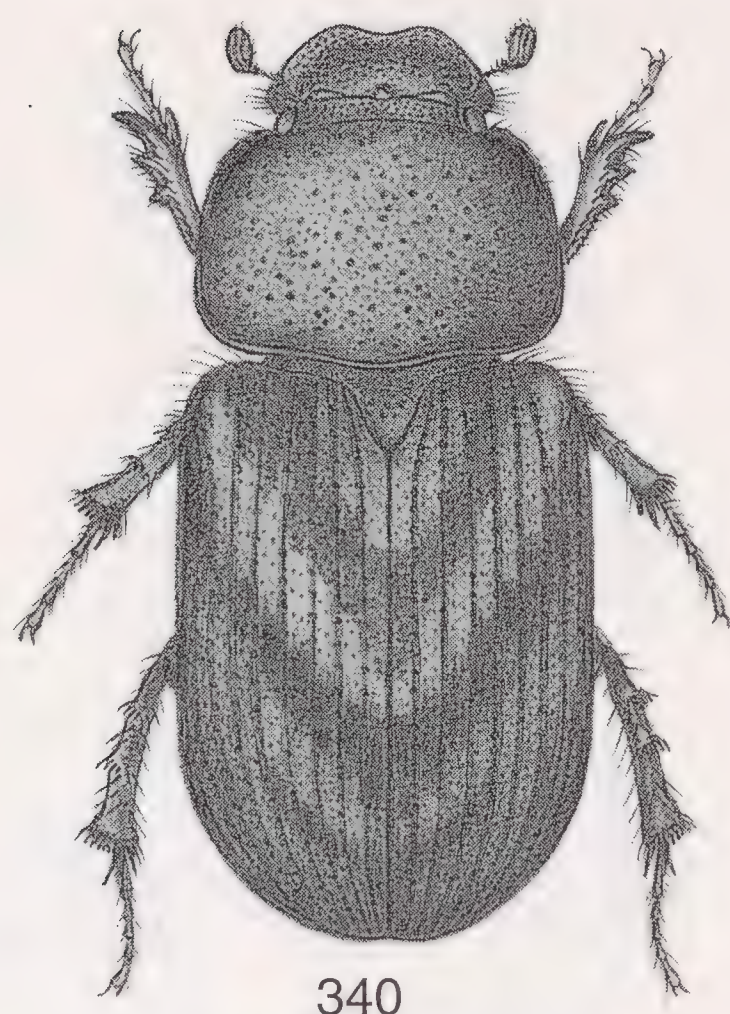
Fig. 323. *Aganocrossus postpilosus* (Reitter, 1895) (male, length 5 mm) (China; Shanghai env.)



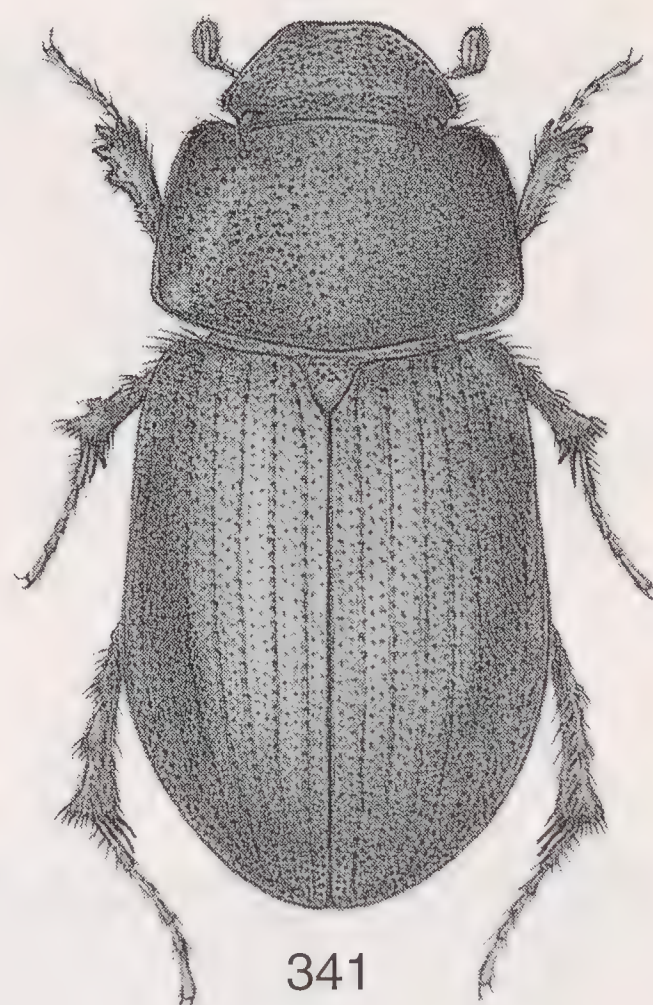
Figs 324-330. Epipharynx and aedeagus, dorsal and lateral view, of: 324-326 - *Acrossoides yorkensis* (Blackburn, 1892); 327-329 - *Acrossus luridus* (Fabricius, 1775); 330: *Adeloparius trimaculatus* (A. Schmidt, 1909)



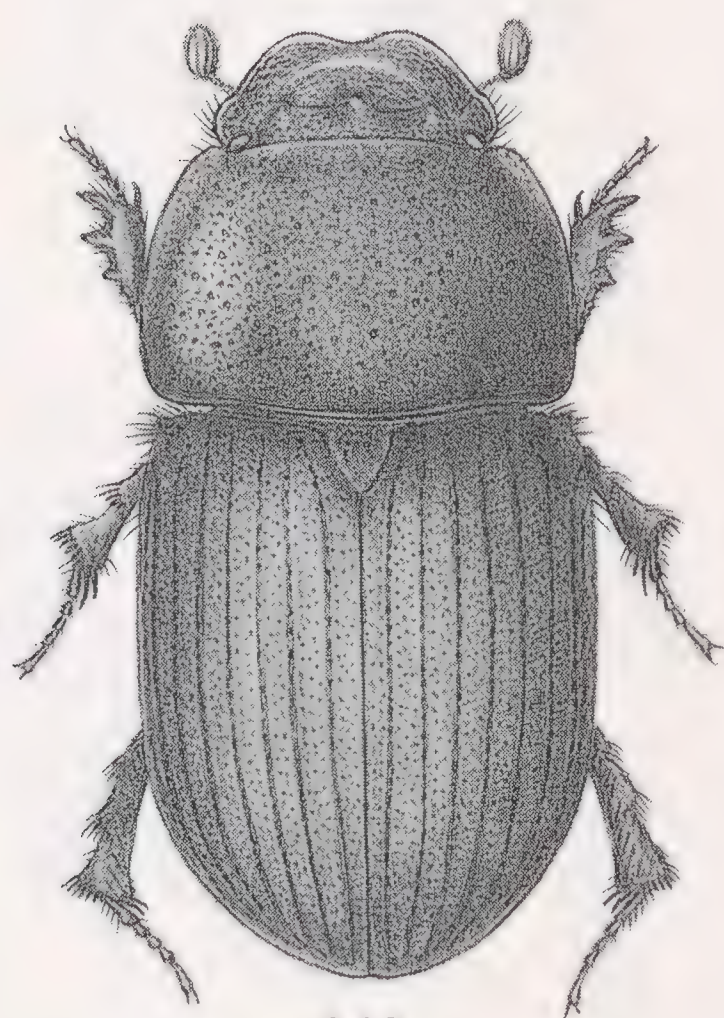
Figs 331-339. Epipharynx and aedeagus, dorsal and lateral view, of: 331-333 - *Afrodiapterna heleninae* (G. Dellacasa, 1984); 334-336 - *Aganocrossus postpilosus* (Reitter, 1892); 337-339 - *Agoliinus congregatus* (Mannerheim, 1853)



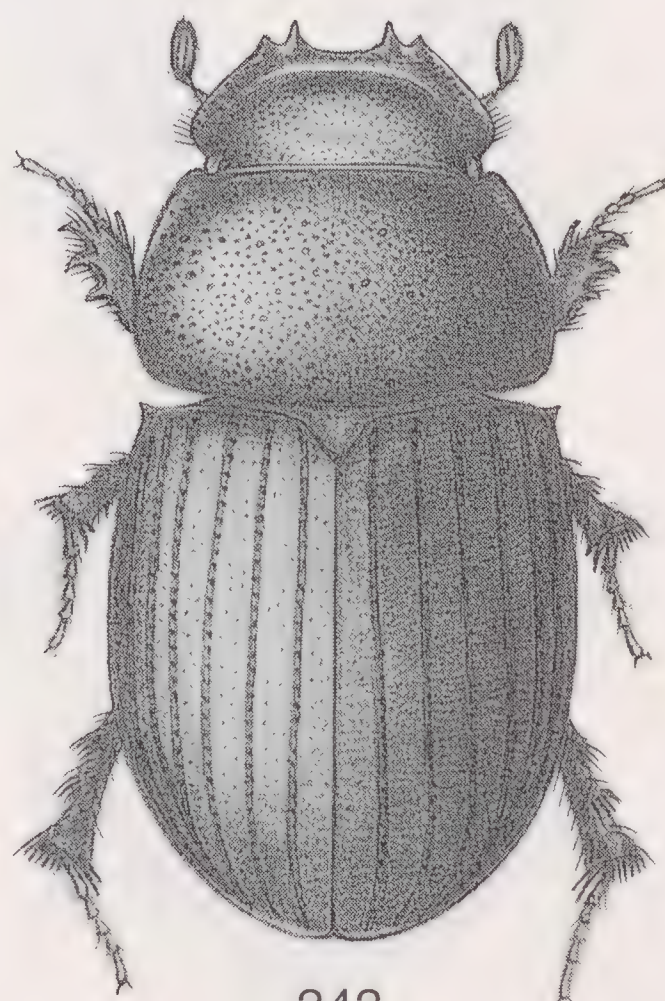
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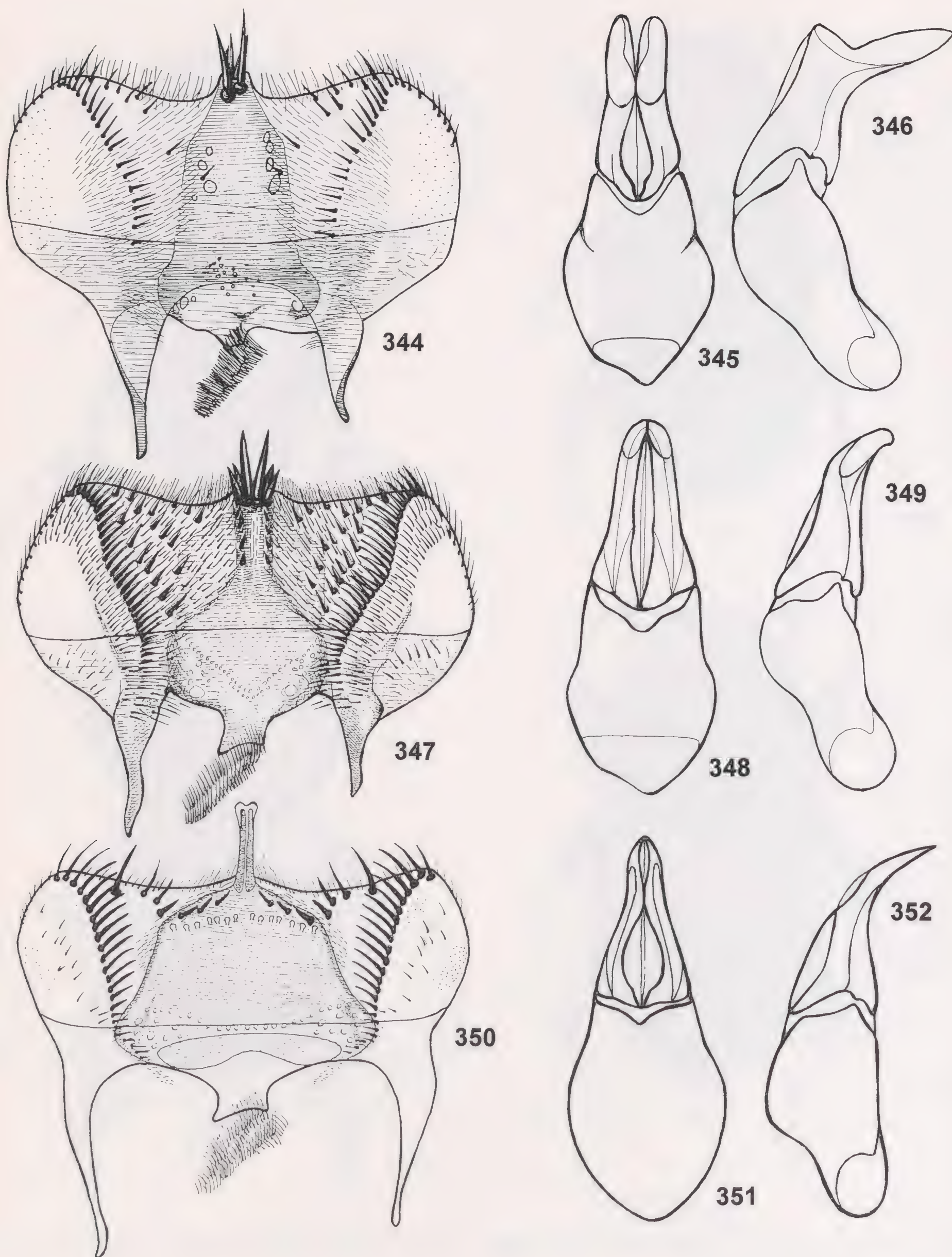
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Fig. 340. *Agoliinus congregatus* (Mannerheim, 1853) (male, length 5 mm) (Canada; British Columbia, Rivelstoke Mt.)

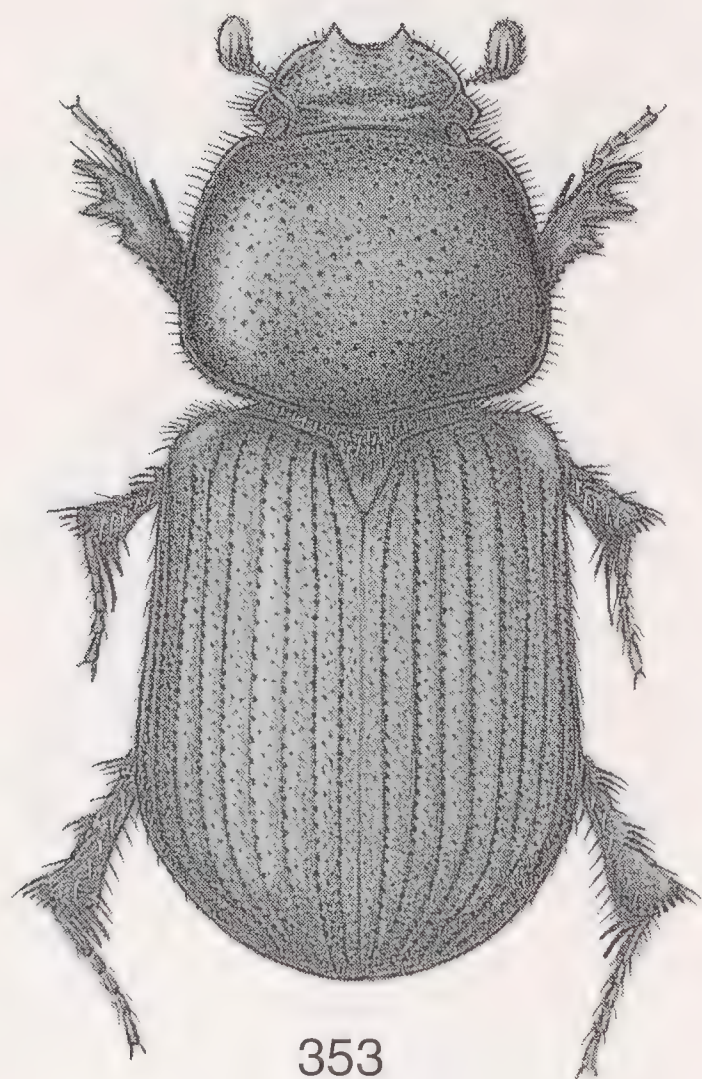
Fig. 341. *Agolius abdominalis* (Bonelli, 1812) (male, length 5 mm) (Italy; Valle d'Aosta, Val d'Ayas)

Fig. 342. *Agrilinus ater* (DeGeer, 1774) (male, length 5 mm) (Ireland; Dublin, Templeogue)

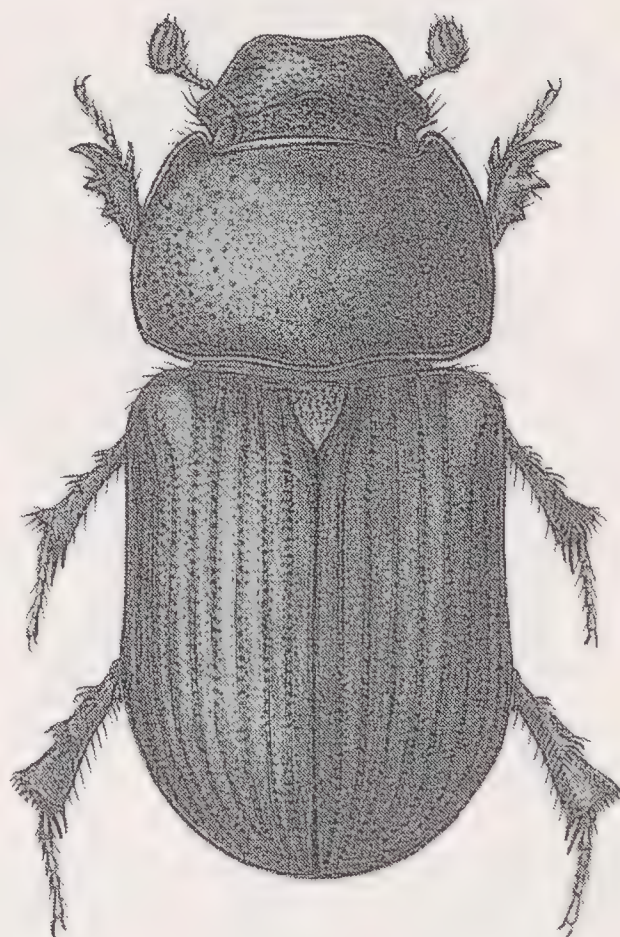
Fig. 343. *Ahermodontus marini* Baguena, 1930 (male, length 4 mm) (Spain; Valencia prov., Castellon Onda)



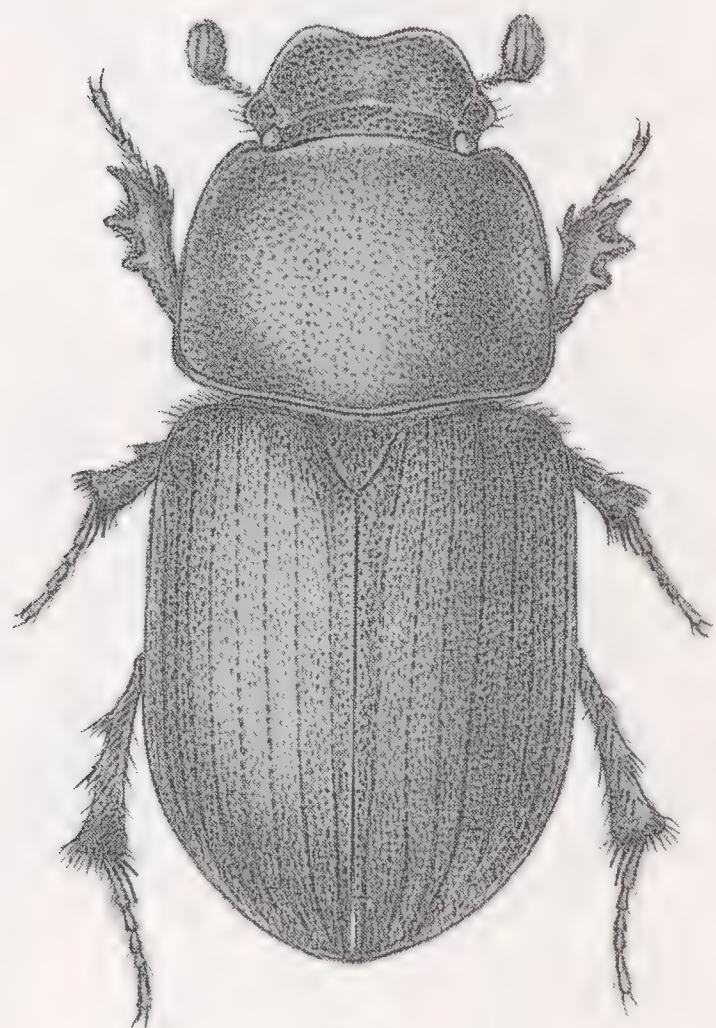
Figs 344-352. Epipharynx and aedeagus, dorsal and lateral view, of: 344-346 - *Agolius abdominalis* (Bonelli, 1812); 347-349 - *Agrilinus ater* (DeGeer, 1774); 350-352 - *Ahermodontus marini* Baguena, 19300



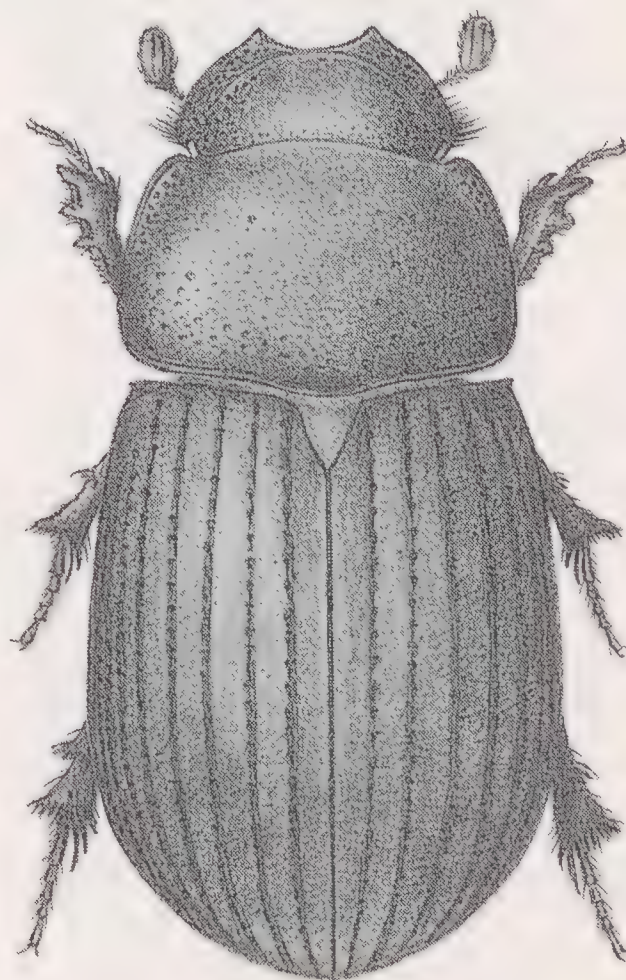
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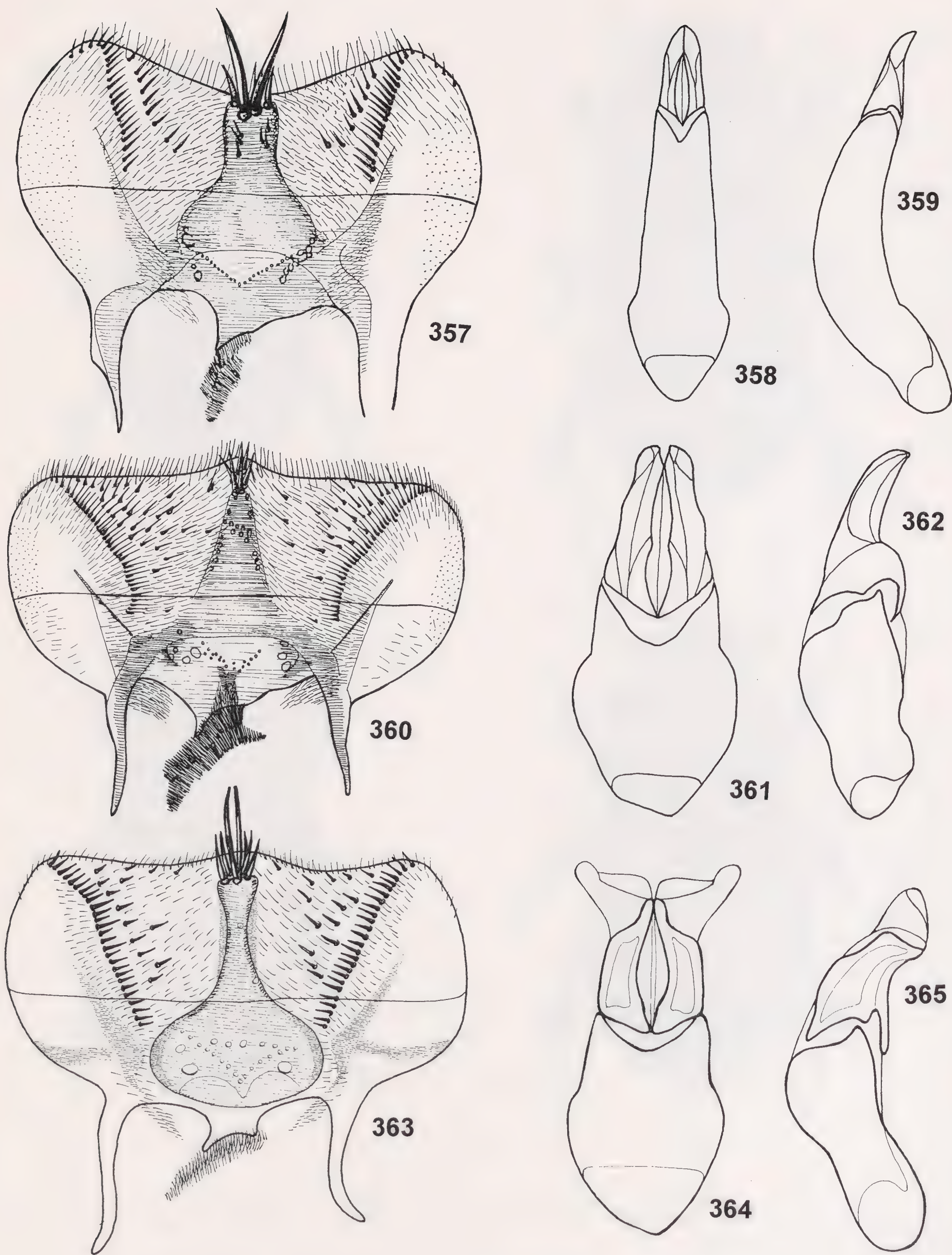
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Fig. 353. *Allobodilus notabilis* (Petrovitz, 1963) (male, length 5.5 mm) (South Africa; Namaqualand, Riet river)

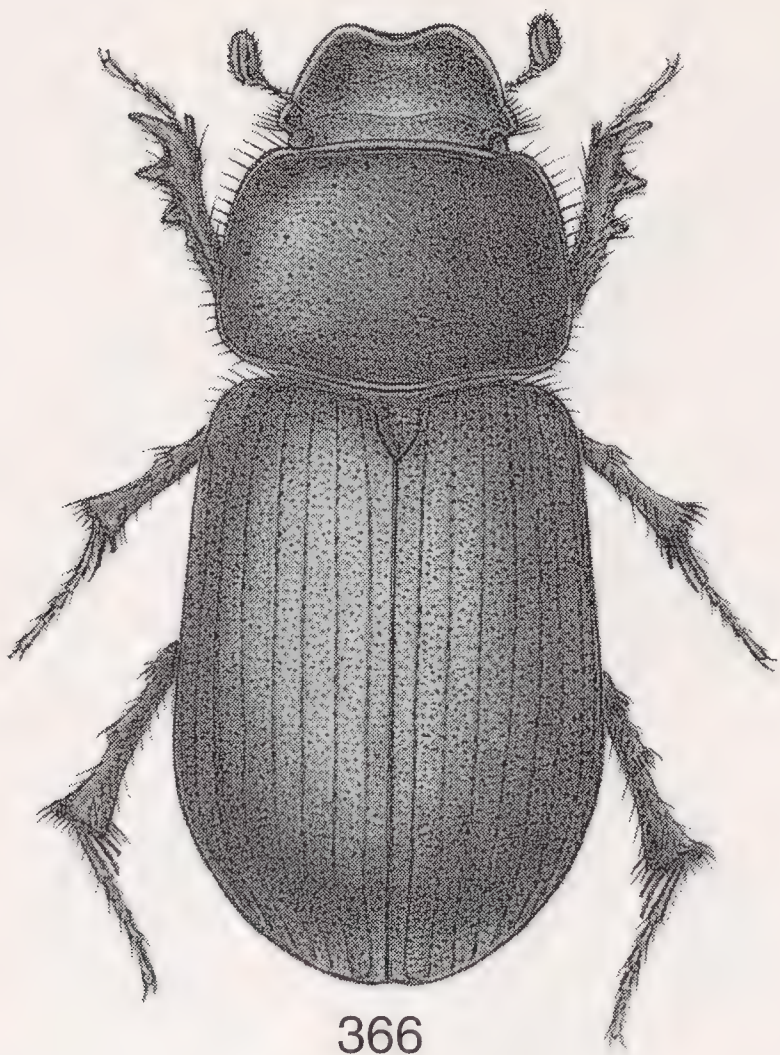
Fig. 354. *Alocoderus semenowi* (Reitter, 1887) (male, length 10 mm) (China; Qingai Prov., Qingai-Hu, Tian Jun)

Fig. 355. *Amidorus obscurus* (Fabricius, 1792) (male, length 7 mm) (Italy; Trentino-Alto Adige, Cortina d'Ampezzo)

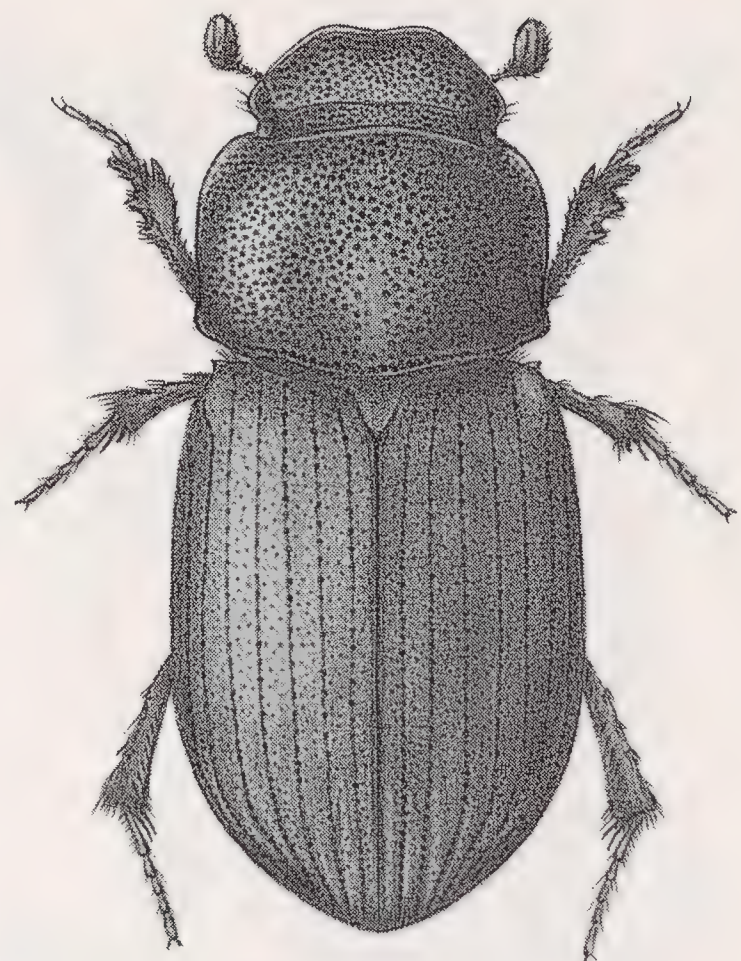
Fig. 356. *Ammoecius elevatus* (Olivier, 1789) (male, length 6 mm) (Italy; Liguria; Savona, Laigueglia)



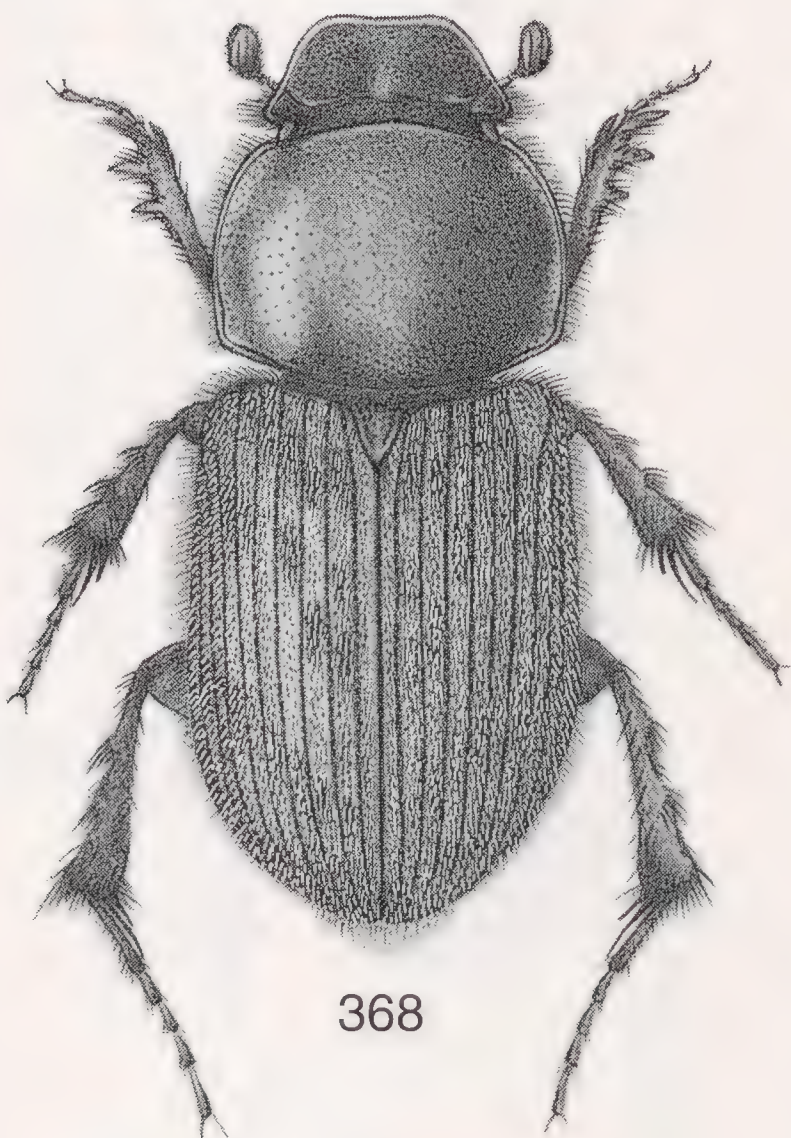
Figs 357-365. Epipharynx and aedeagus, dorsal and lateral view, of: 357-359 - *Allobodilus notabilis* (Petrovitz, 1963); 360-362 - *Alocoderus semenowi* (Reitter, 1887); 363-365 - *Amidorus obscurus* (Fabricius, 1792)



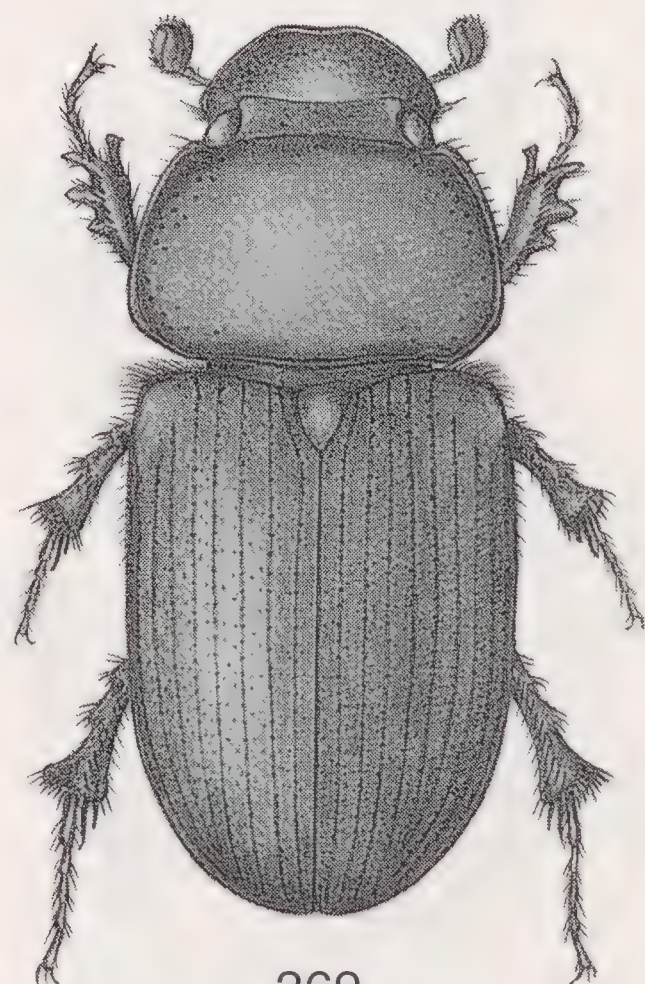
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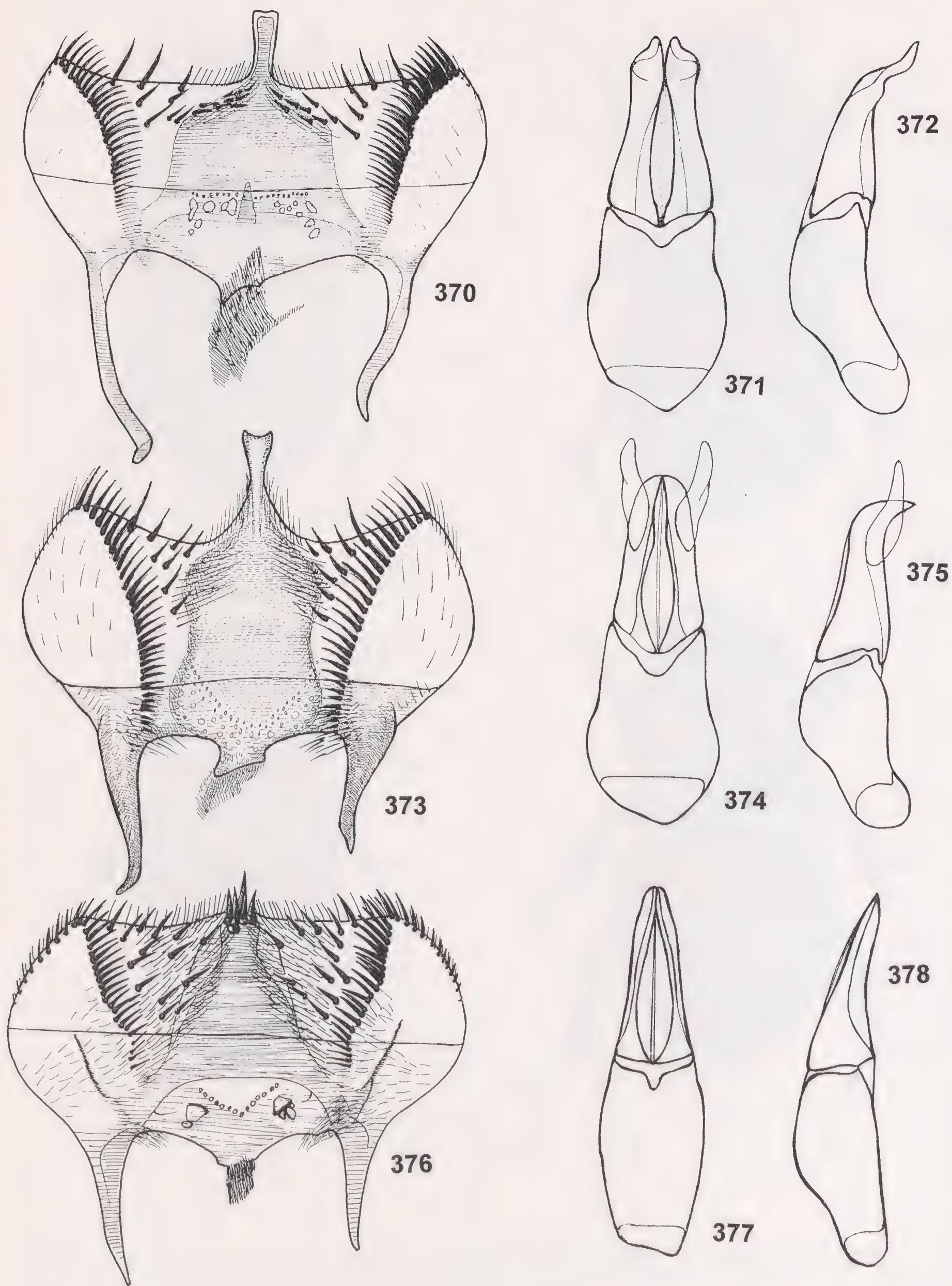
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Fig. 366. *Anomius castaneus* (Illiger, 1803) (male, length 6 mm) (Portugal; Ribatejo, Muge)

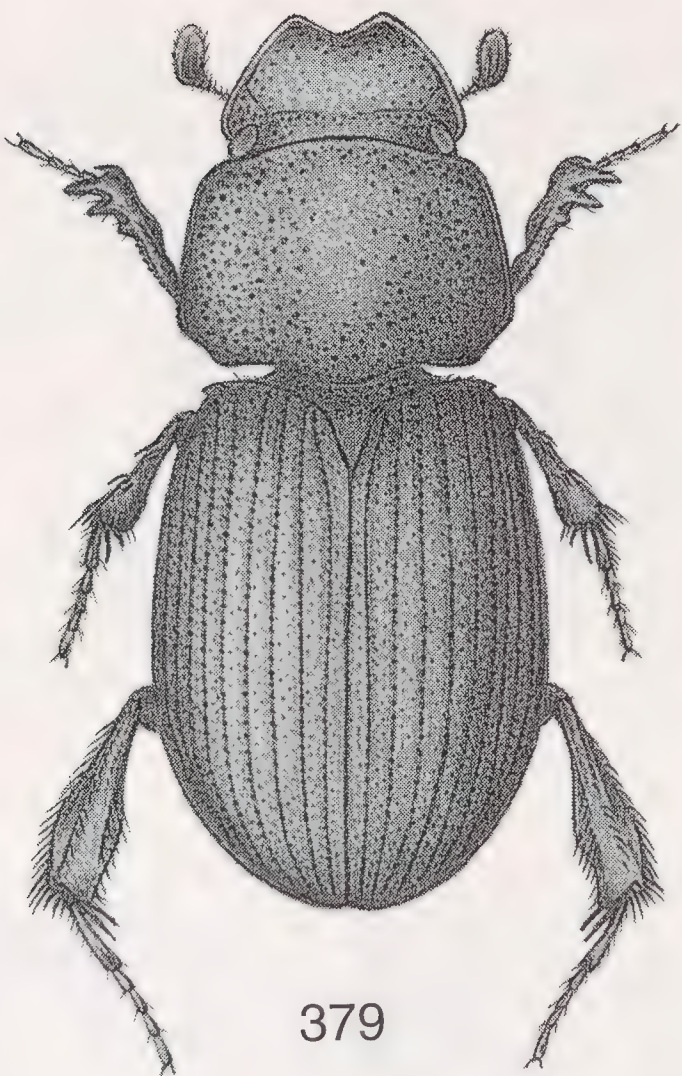
Fig. 367. *Aparammoecius isaburoi* (Nakane, 1956) (male, length 4.5 mm) (Japan; Nara Prf., Wakakusa)

Fig. 368. *Aphodaulacus turkestanicus* (Heyden, 1881) (male, length 8 mm) (Turkmenistan; Aral, Barsa Kelmes)

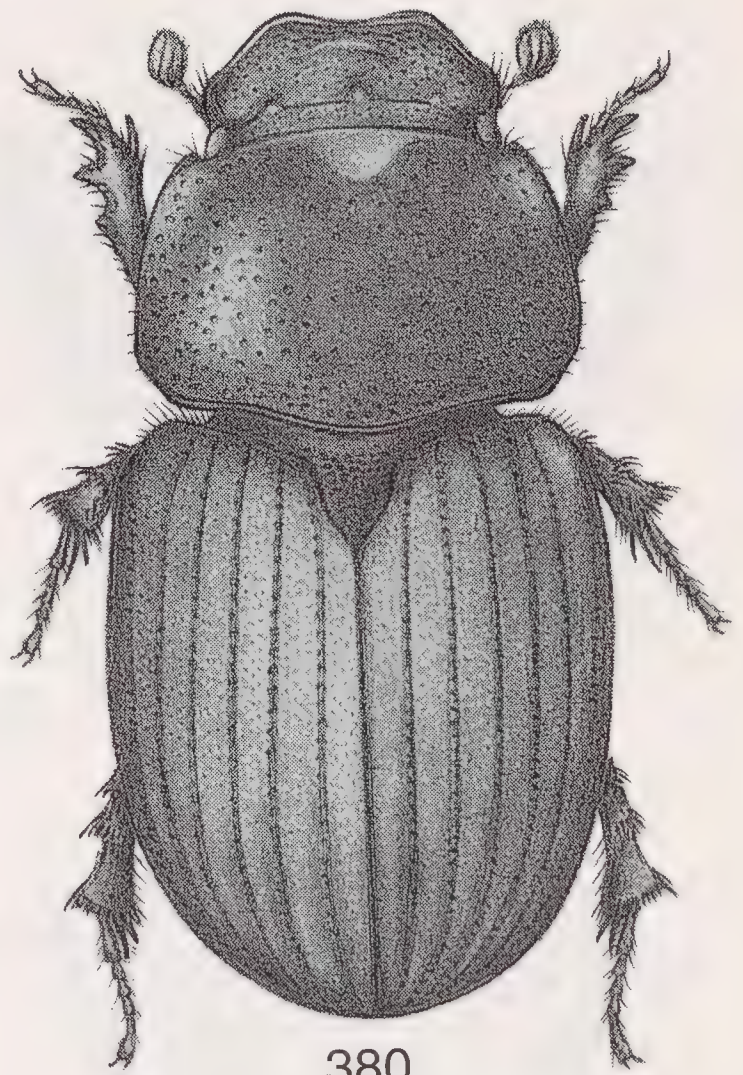
Fig. 369. *Aphodiellus impunctatus* (Waterhouse, 1875) (male, length 7 mm) (Russia; Siberia, Ussuri)



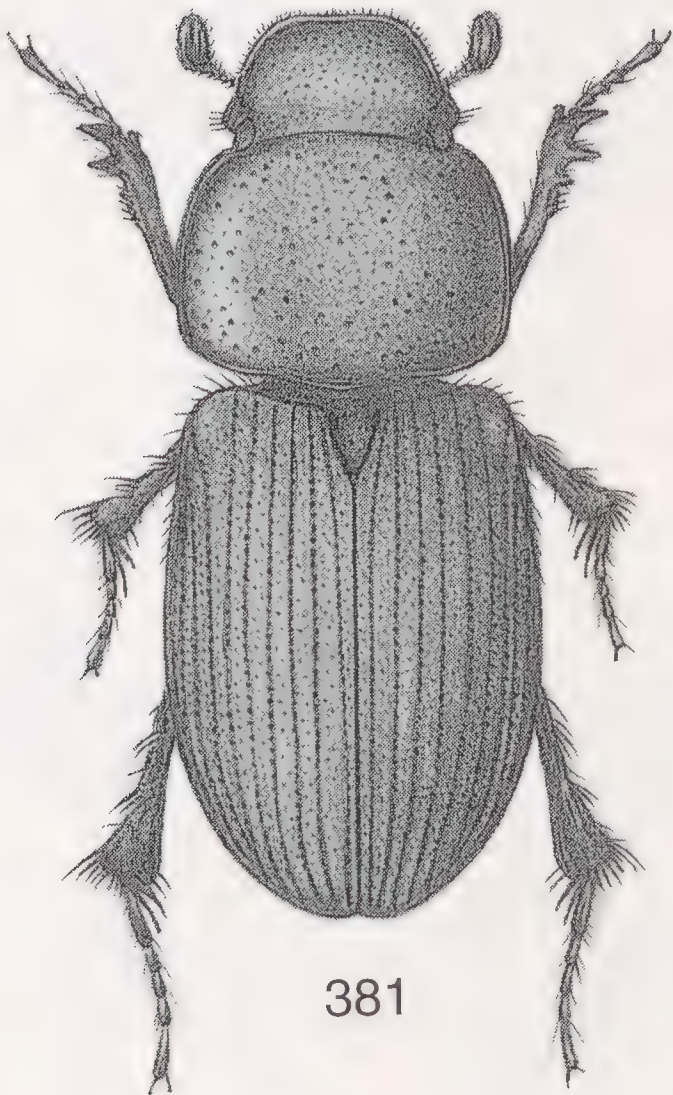
Figs 370-378. Epipharynx and aedeagus, dorsal and lateral view, of: 370-372 - *Ammoecius elevatus* (Olivier, 1789); 373-375 - *Anomius castaneus* (Illiger, 1803); 376-378 - *Aparammoecius isaburoi* (Nakane, 1956)



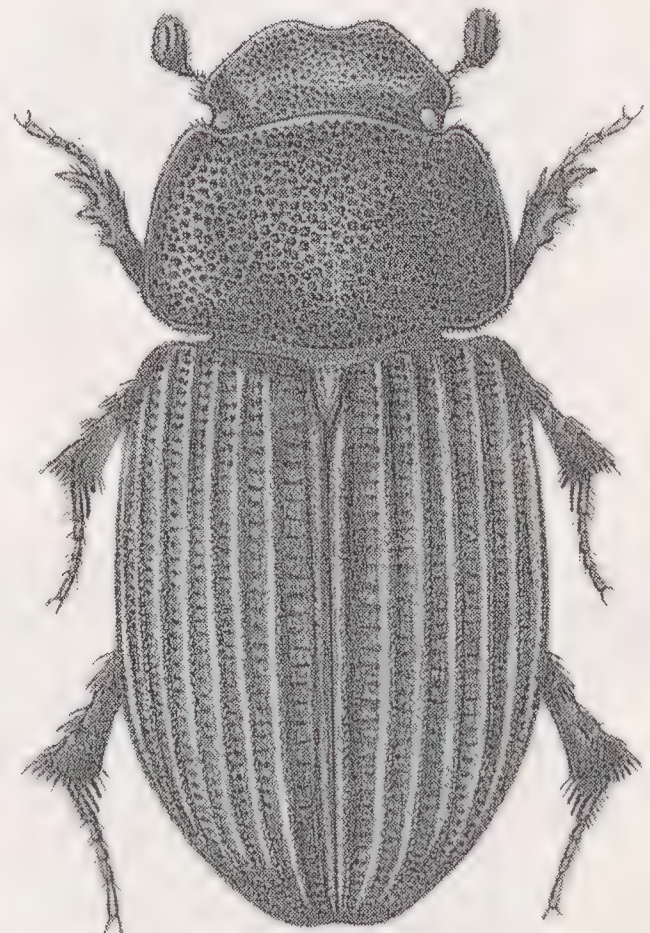
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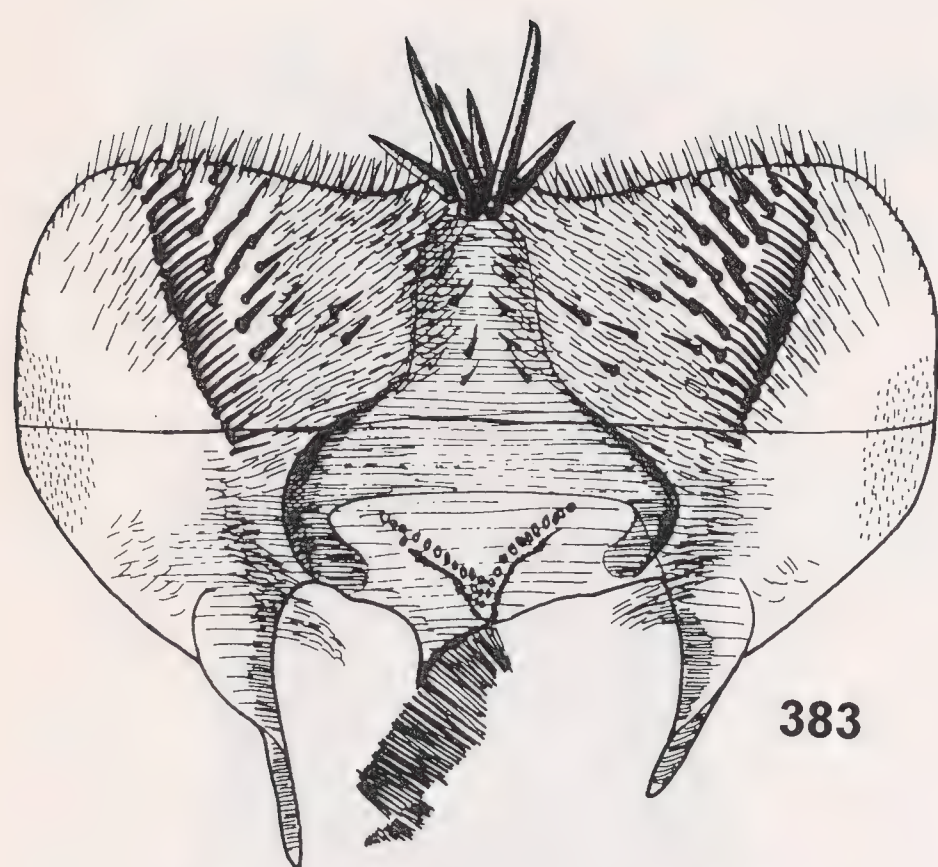
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Fig. 379. *Aphodiopsis latipes* Paulian, 1942 (male, length 4.5 mm) (Ivory Coast; Danané env.)

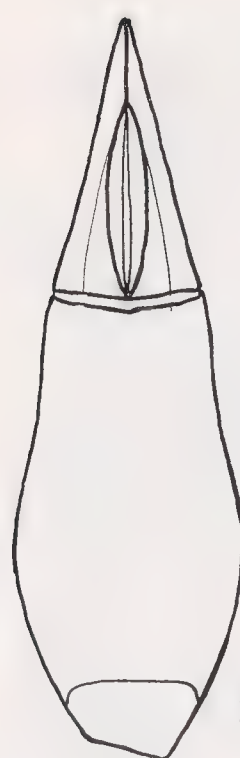
Fig. 380. *Aphodius fimetarius* (Linné, 1758) (male, length 8 mm) (Italy; Calabria, Reggio di Calabria, Foce Fiume Petrace)

Fig. 381. *Aphodobius inornatus* (A. Schmidt, 1908) (male, length 5 mm) (South Africa; Namaqualand, Riet river)

Fig. 382. *Aphodoharmogaster costata* Endrödi, 1983 (male, length 6 mm) (South Africa; Transvaal, Bergvliet forest farm)



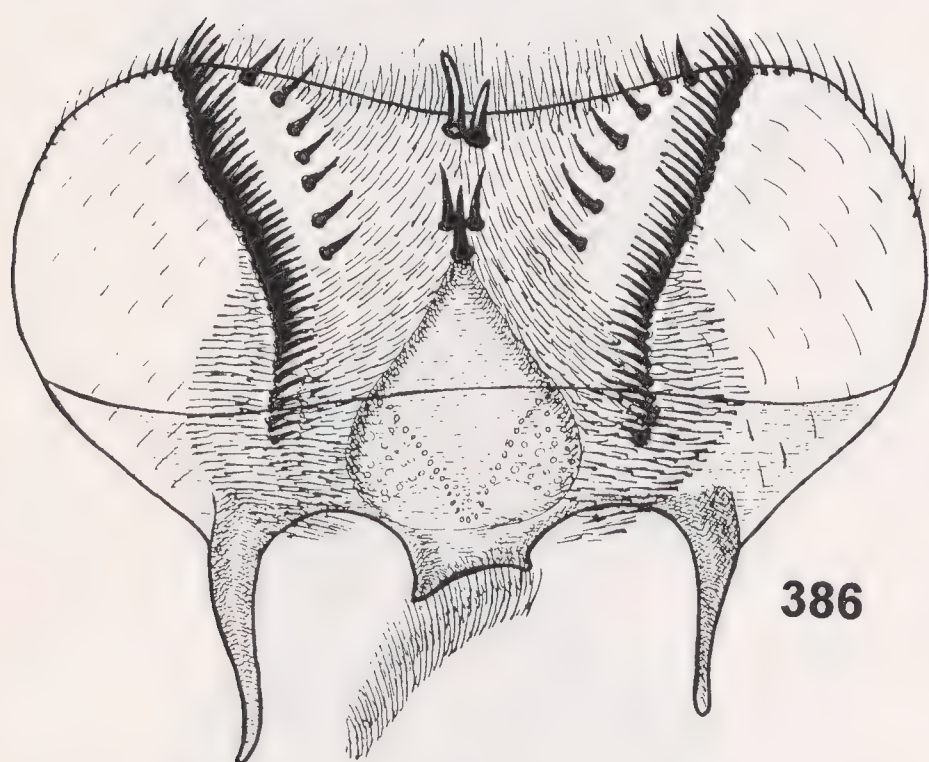
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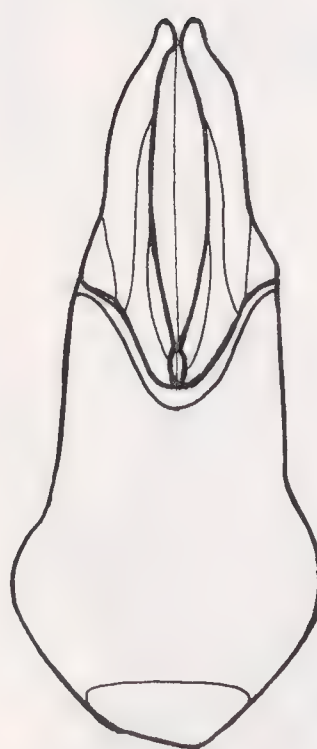
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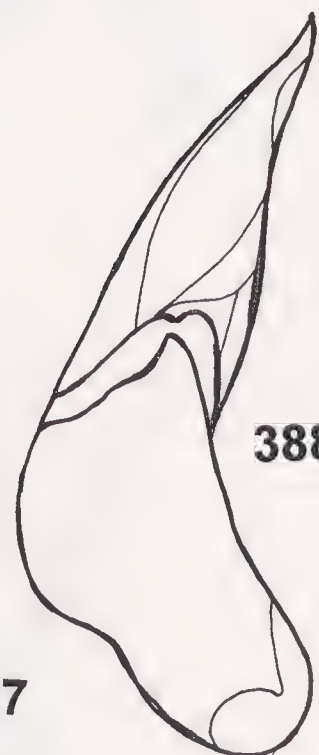
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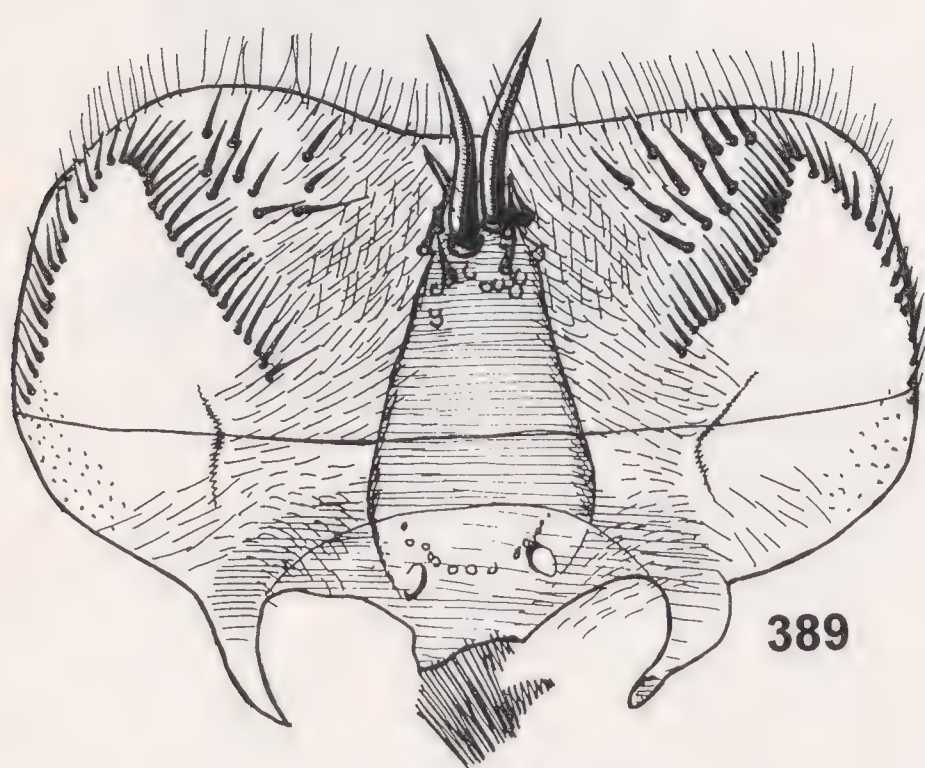
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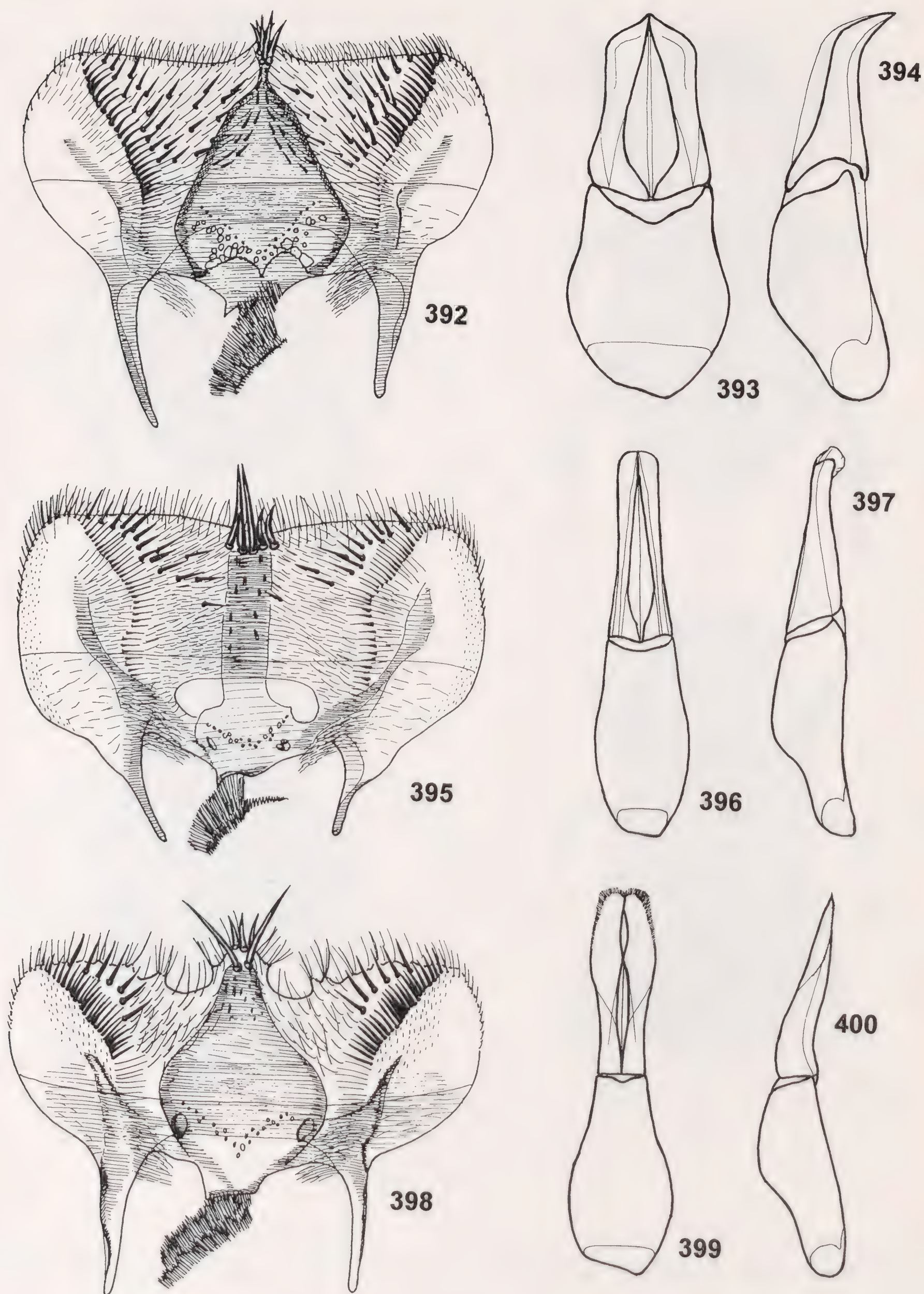


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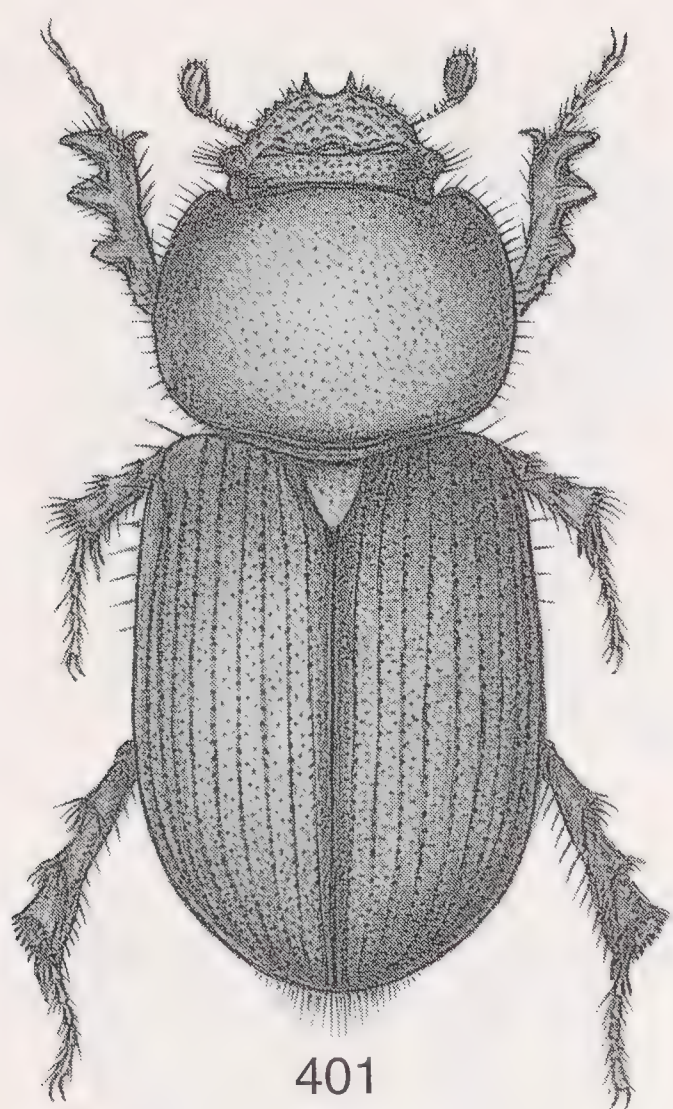


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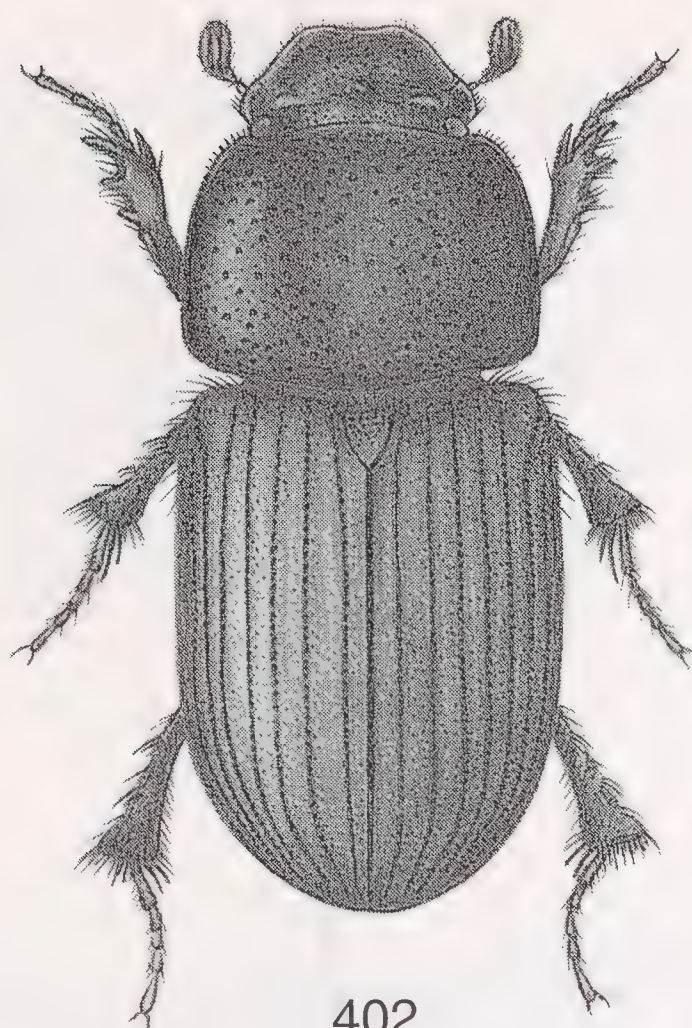
Figs 383-391. Epipharynx and aedeagus, dorsal and lateral view, of: 383-385 - *Aphodaulacus turkestanicus* (Heyden, 1881); 386-388 - *Aphodiellus impunctatus* (Waterhouse, 1875); 389-391 - *Aphodiopsis latipes* Paulian, 1942



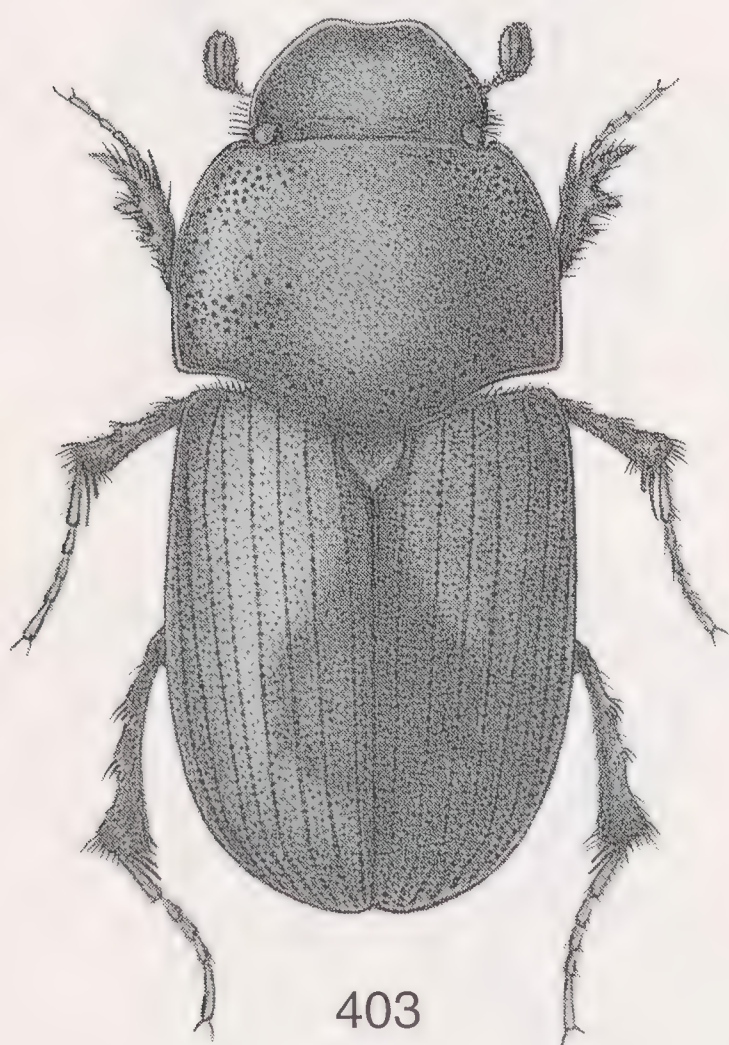
Figs 392-400. Epipharynx and aedeagus, dorsal and lateral view, of: 392-394 - *Aphodius fimetarius* (Linné, 1758); 395-397 - *Aphodobius inornatus* (A. Schmidt, 1908); 398-400 - *Aphodoharmogaster costata* Endrödi, 1983



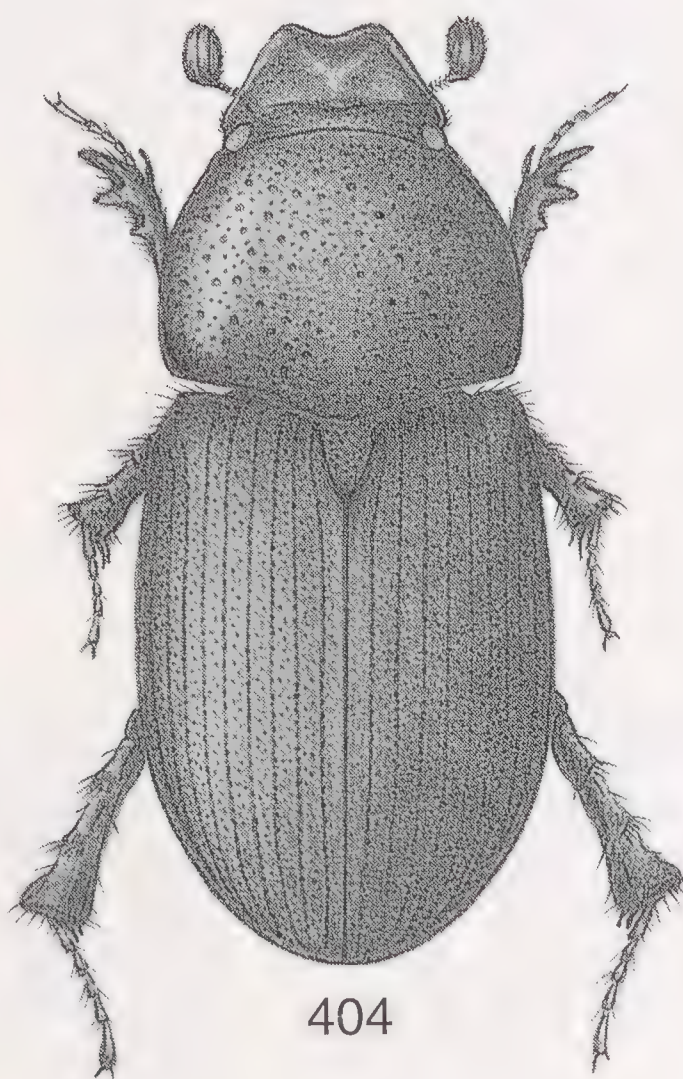
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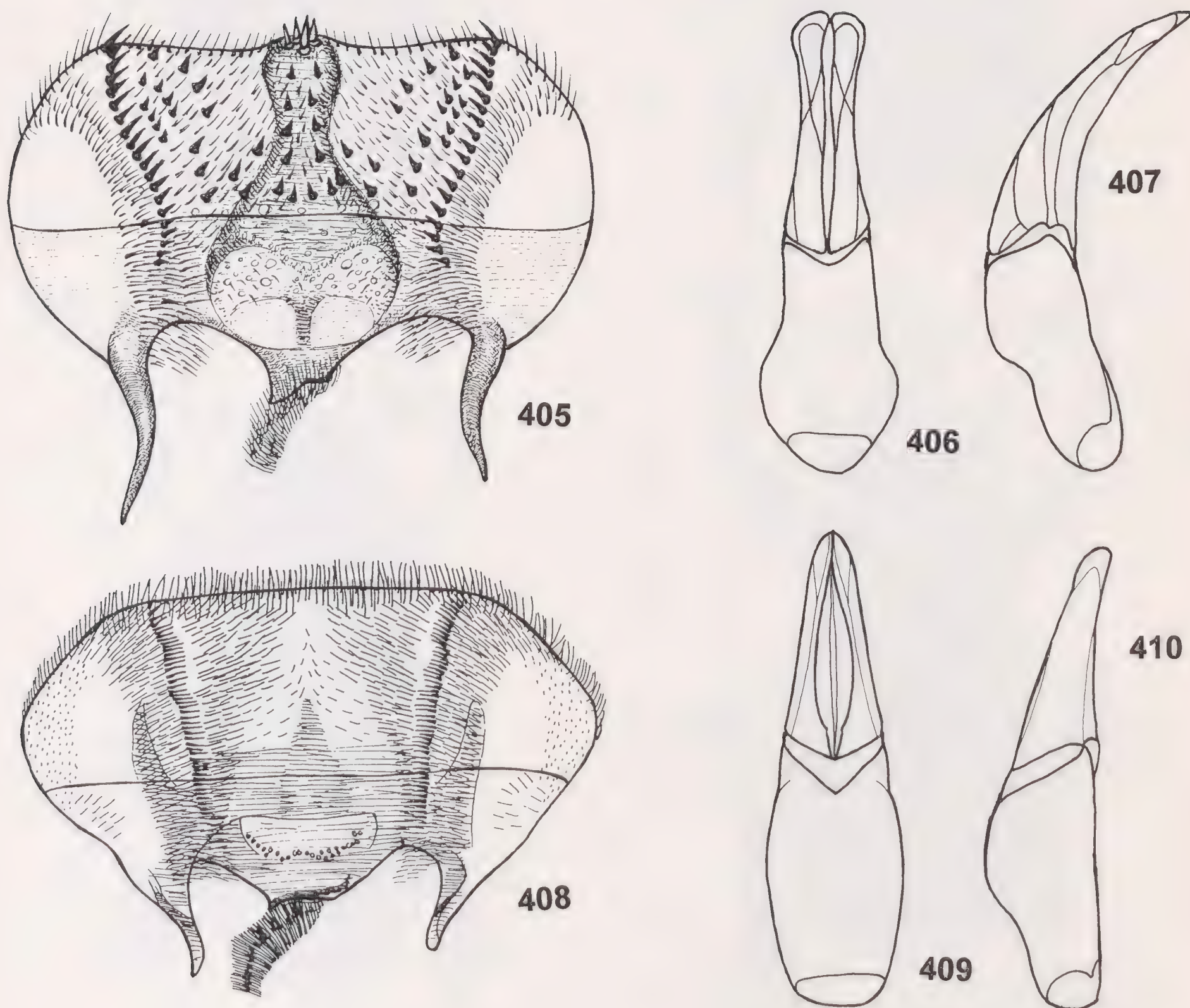
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Fig. 401. *Apsteiniella georgii* (W. Koshantschikov, 1912) (male, length 7 mm) (Turkmenistan; Repetek)

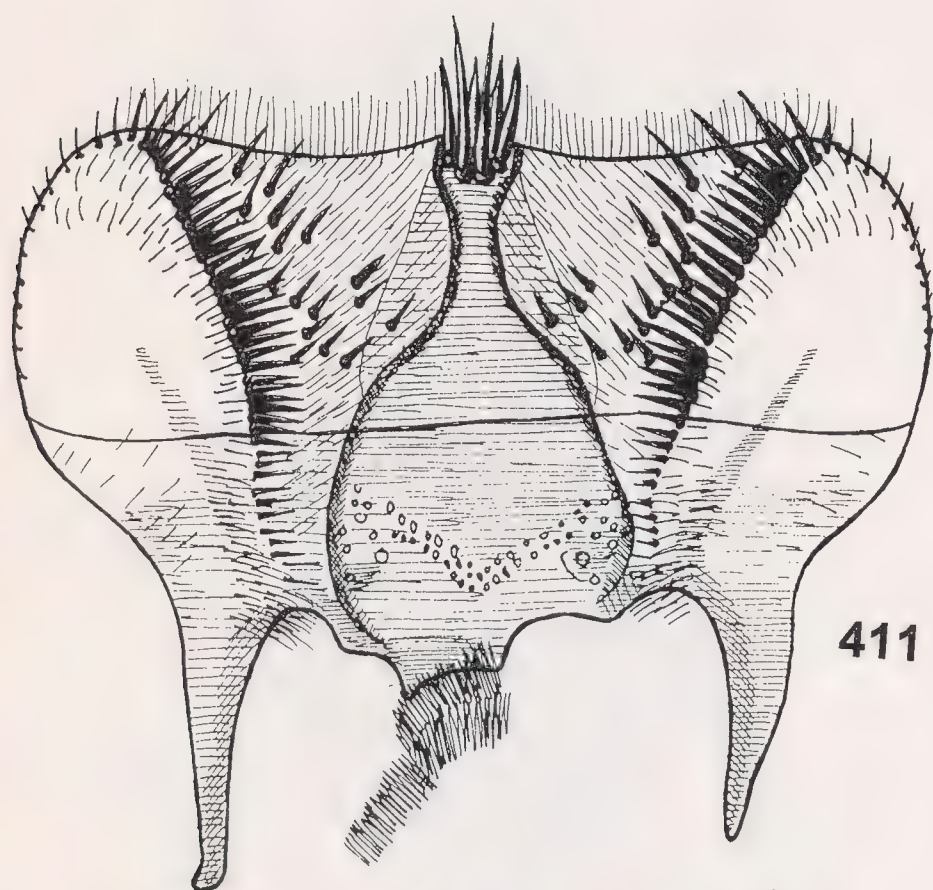
Fig. 402. *Basilewskyanus elisabethae* (Endrödi, 1956) (male, length 8 mm) (Zaire; Elisabethville [Lubumbashi])

Fig. 403. *Biralus satellitius* (Herbst, 1789) (male, length 7 mm) (Italy; Puglia, Bari, Crispiano)

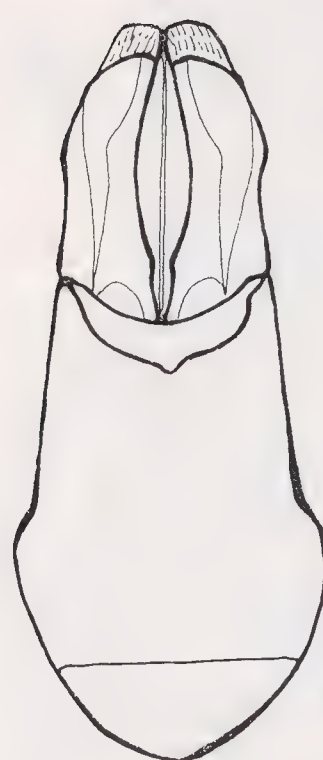
Fig. 404. *Blackburneus furcatus* (A. Schmidt, 1909) (male, length 3 mm) (Brazil; Mato Grosso, Cunyaba)



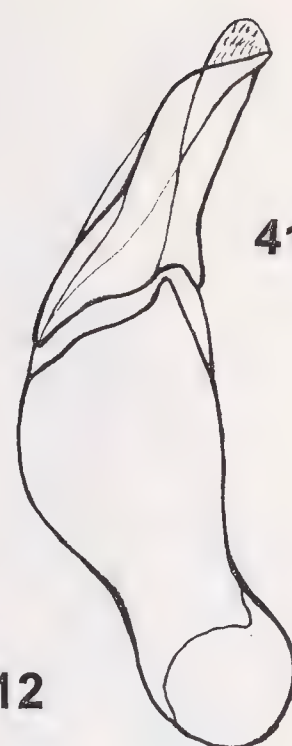
Figs 405-410. Epipharynx and aedeagus, dorsal and lateral view, of: 405-407 - *Apsteiniella georgii* (W. Koshantschikov, 1912); 408-410 - *Basilewskianus elisabethae* (Endrödi, 1956)



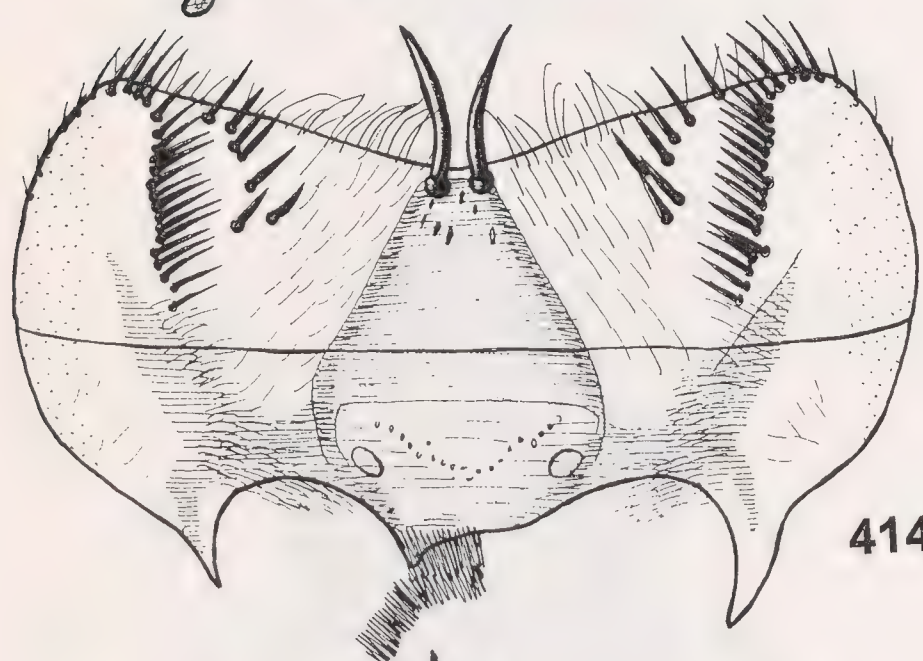
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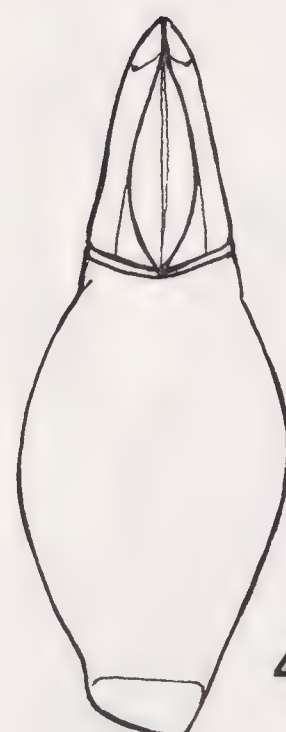
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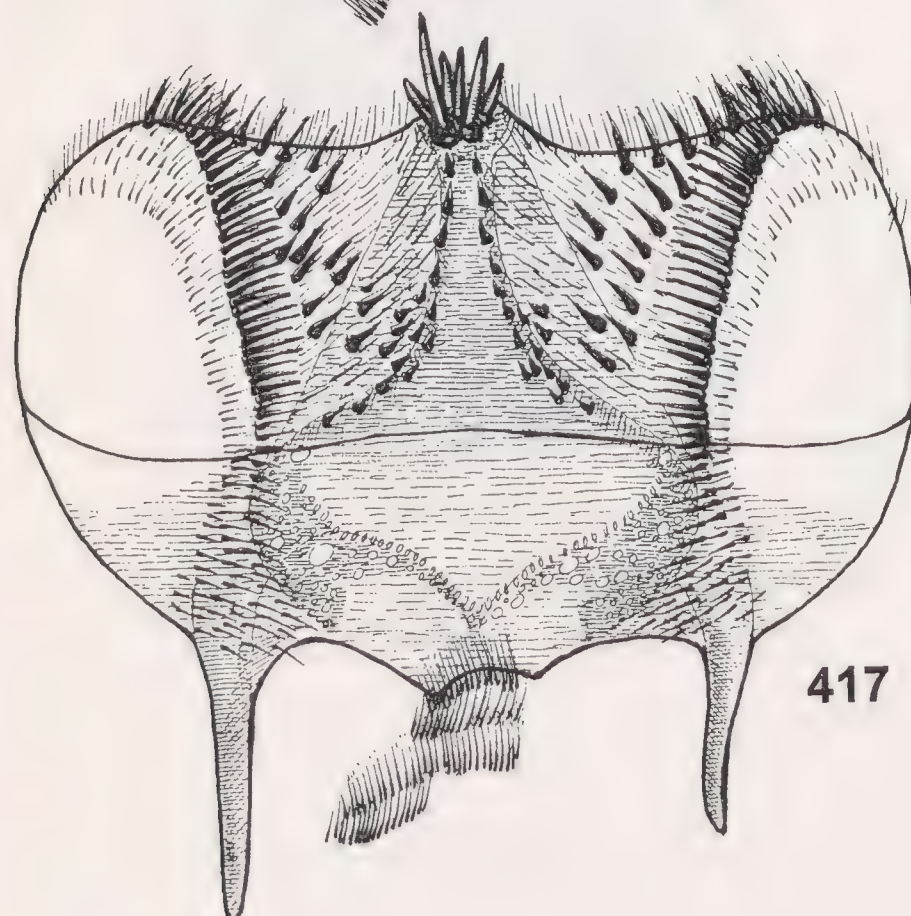
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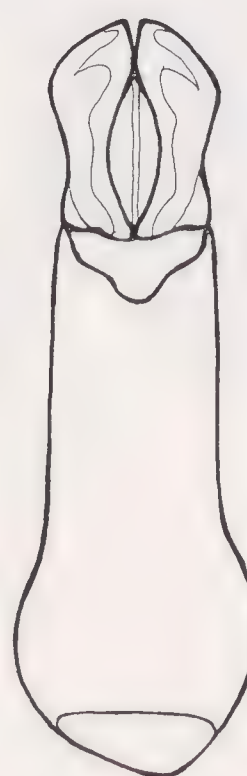
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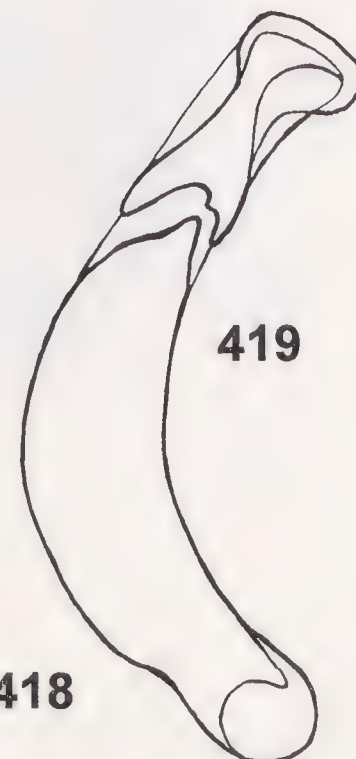
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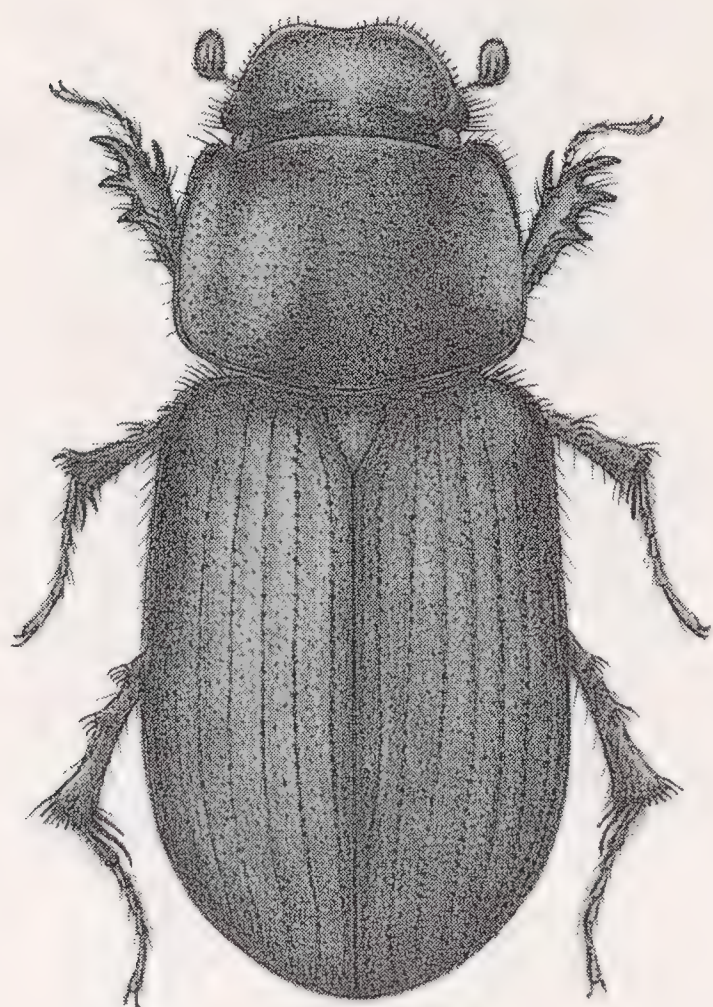


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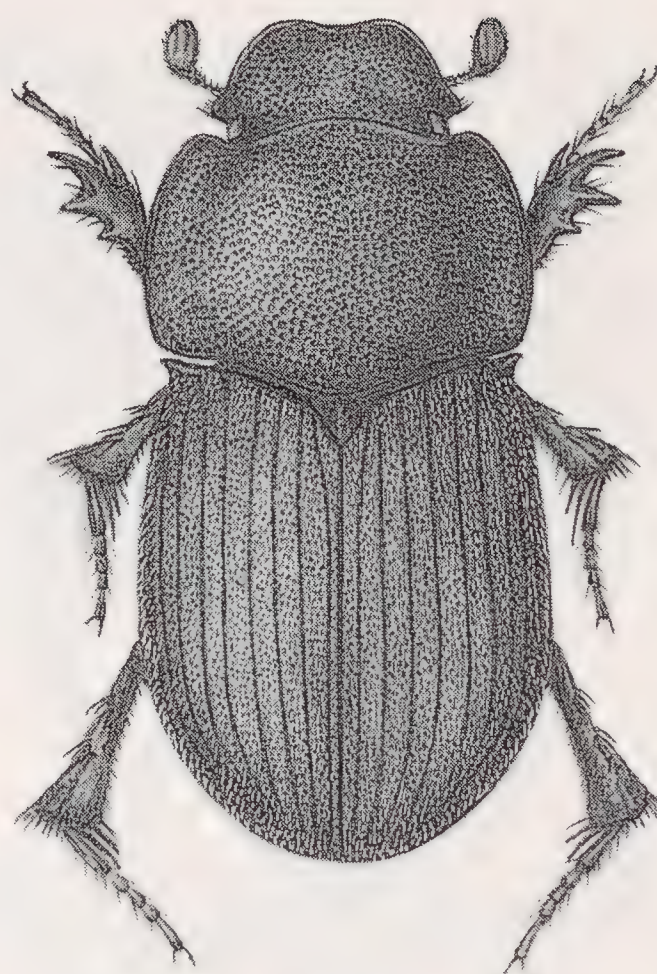


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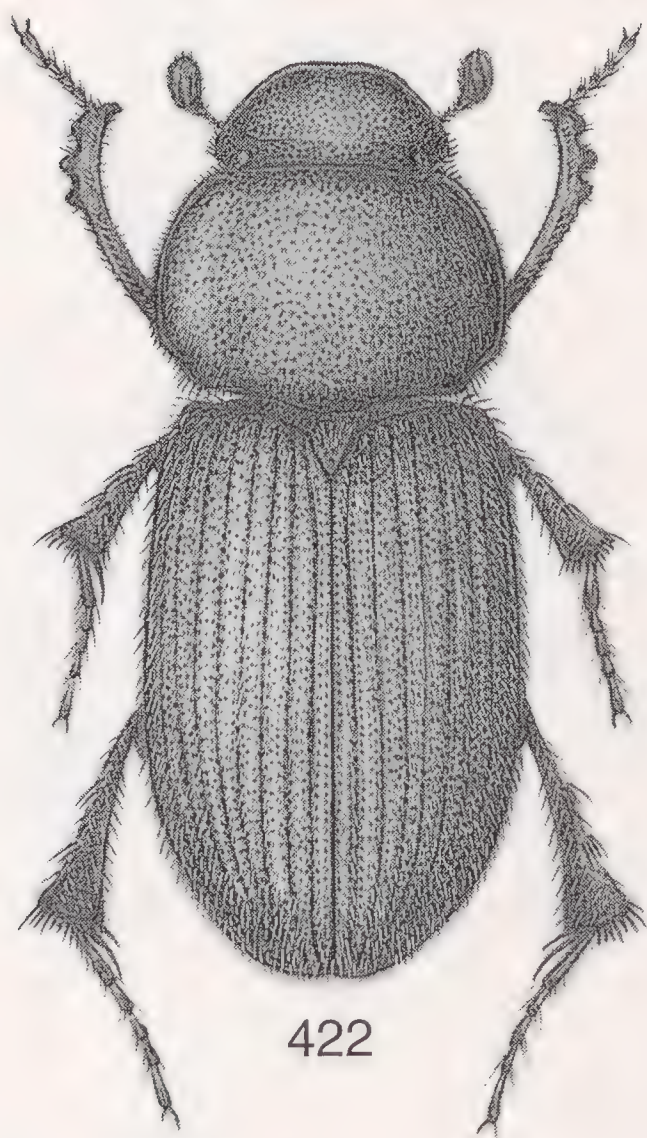
Figs 411-419. Epipharynx and aedeagus, dorsal and lateral view, of: 411-413 - *Biralus satellitius* (Herbst, 1789); 414-416 - *Blackburneus furcatus* (A. Schmidt, 1909); 417-419 - *Bodilus lugens* (Creutzer, 1799)



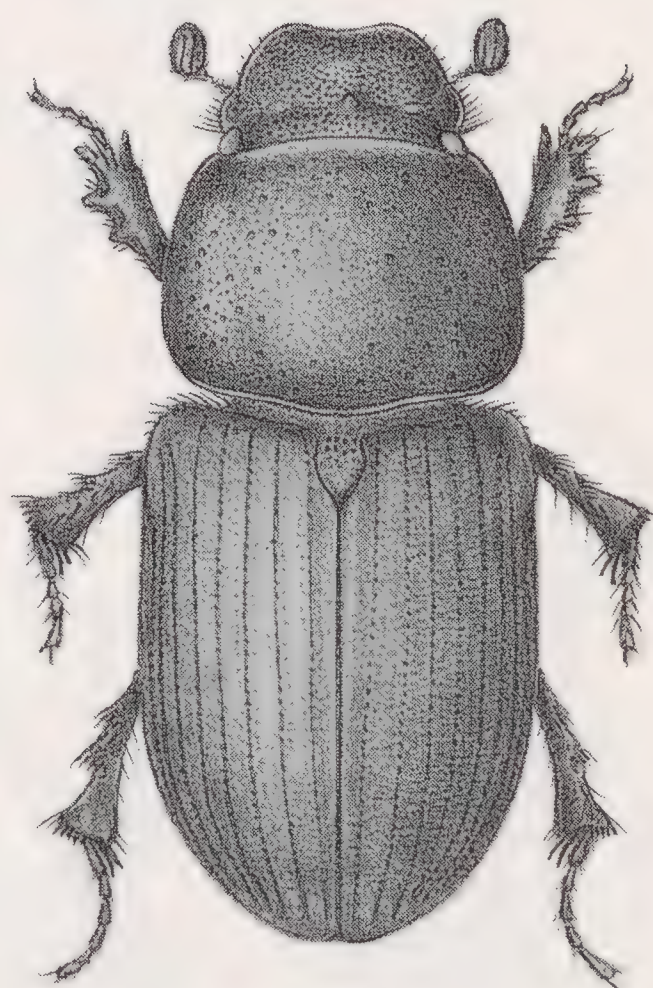
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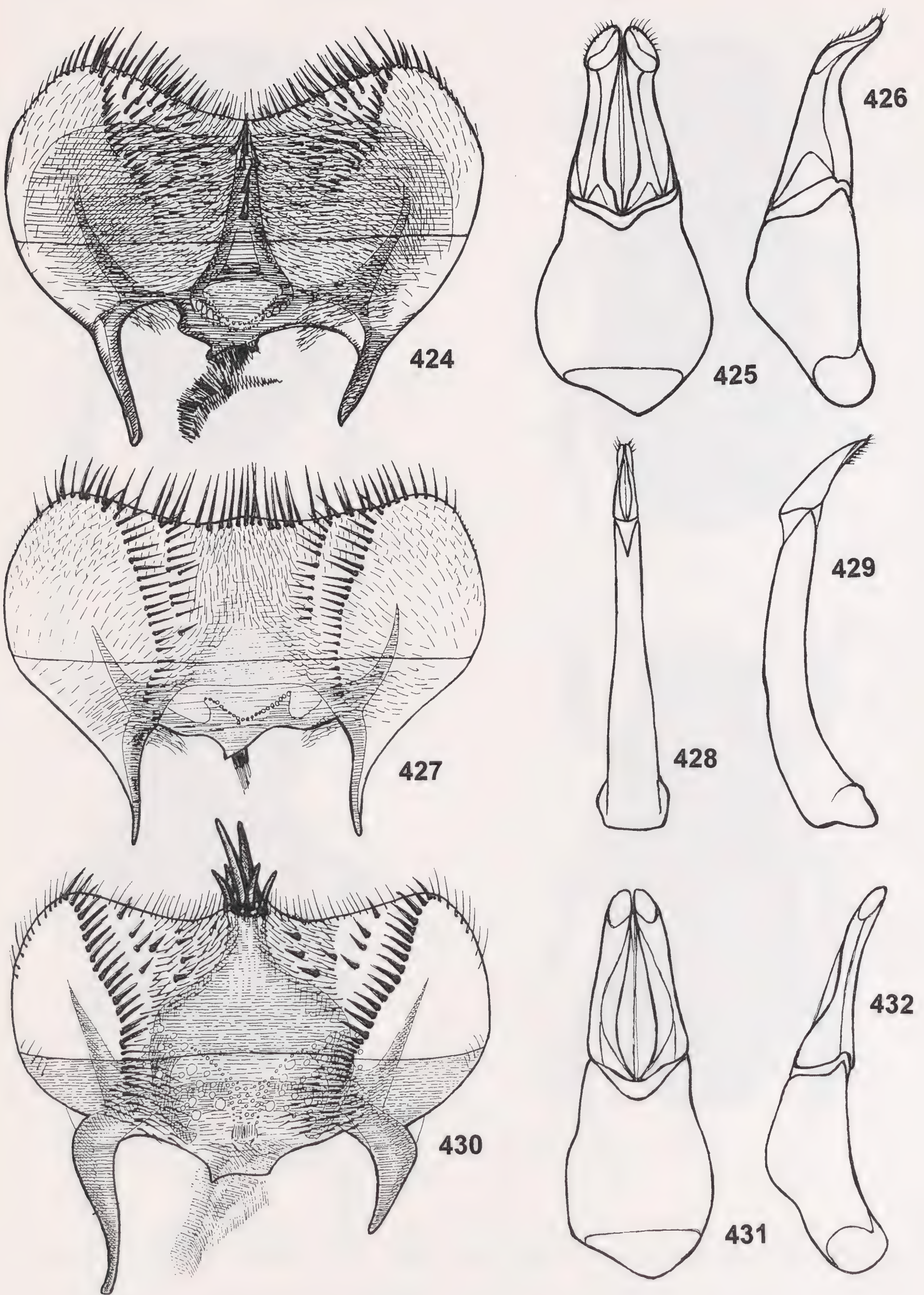
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Fig. 420. *Bodilus lugens* (Creutzer, 1799) (male, length 8 mm) (Italy; Calabria, Catanzaro, Sila, Moccone)

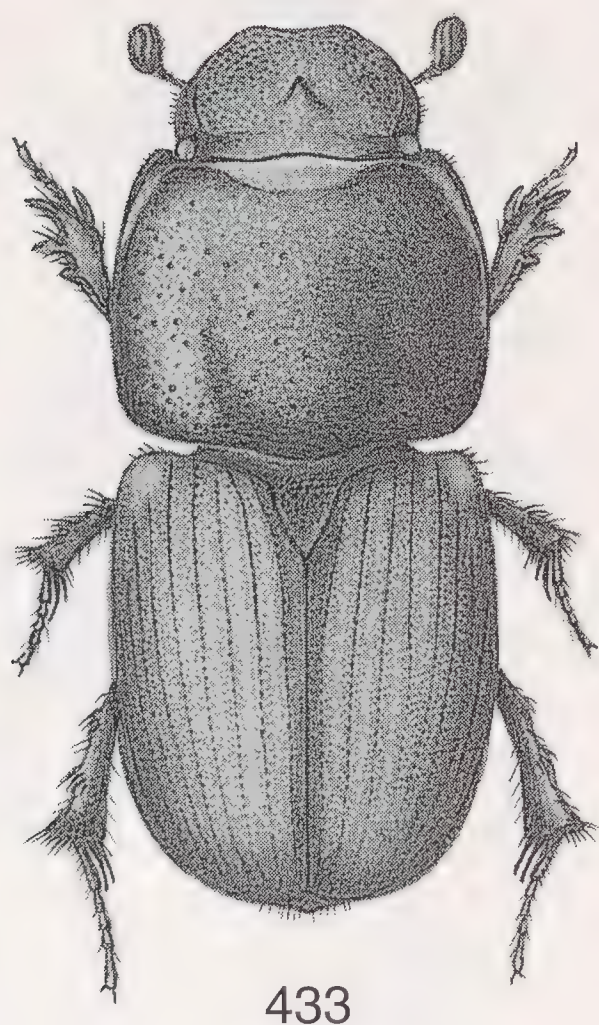
Fig. 421. *Boucomontiellus pelliculosus* (Balthasar, 1932) (male, length 6 mm) (China; Szechuan, Tatsienlu, Nitou)

Fig. 422. *Brachiaphodius pilosus* (Harold, 1874) (male, length 7 mm) (Tonkin [Vietnam]; Pedong)

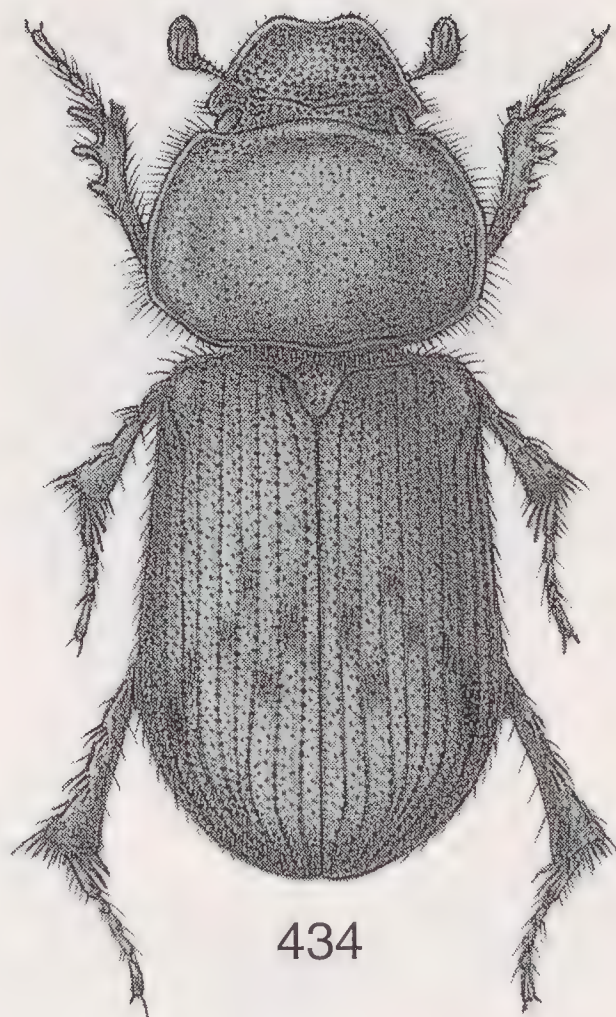
Fig. 423. *Calamosternus granarius* (Linné, 1767) (male, length 5 mm) (Italy; Piemonte, Alessandria, Rigoroso)



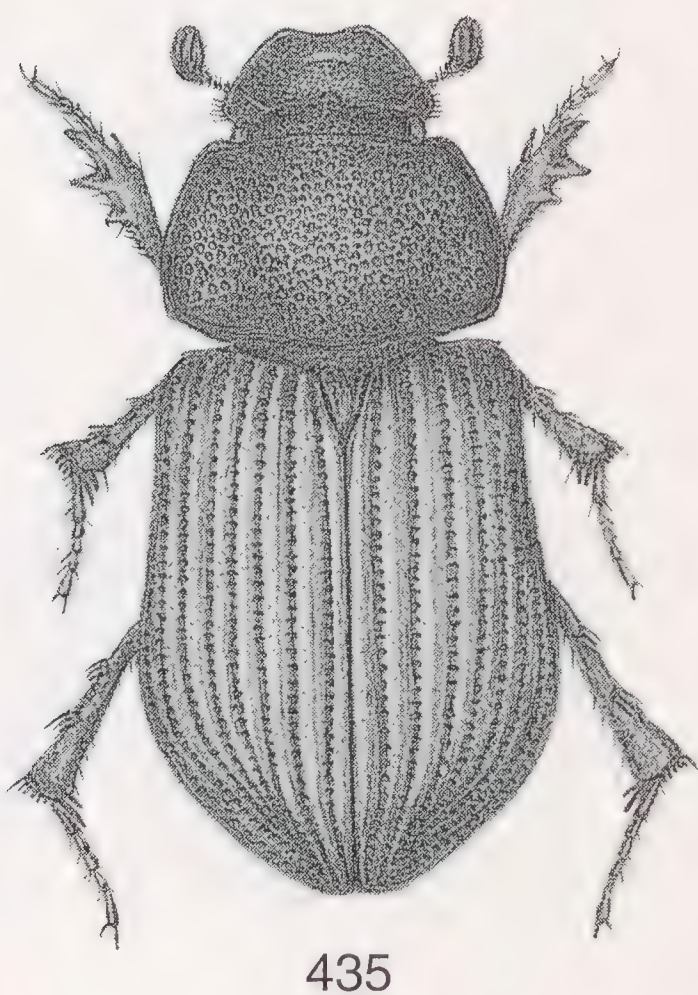
Figs 424-432. Epipharynx and aedeagus, dorsal and lateral view, of: 424-426 - *Boucomontiellus pelliculosus* (Balthasar, 1932); 427-429 - *Brachiaphodius pilosus* (Harold, 1874); 430-432 - *Calamosternus granarius* (Linné, 1767)



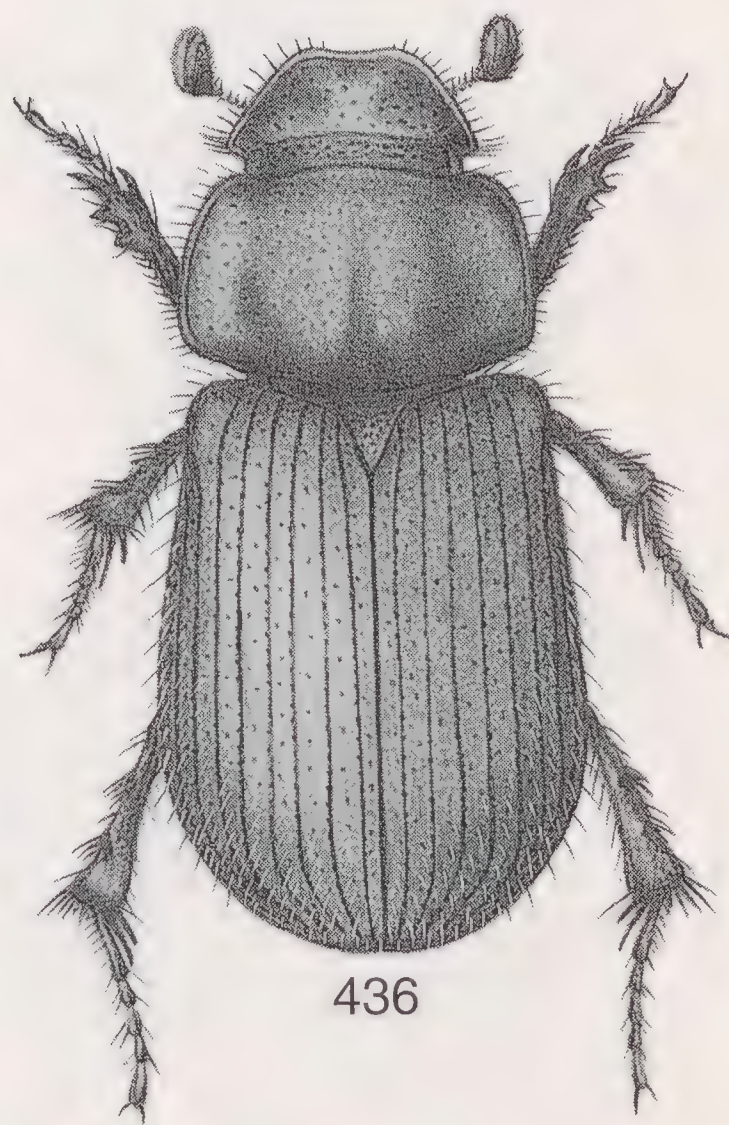
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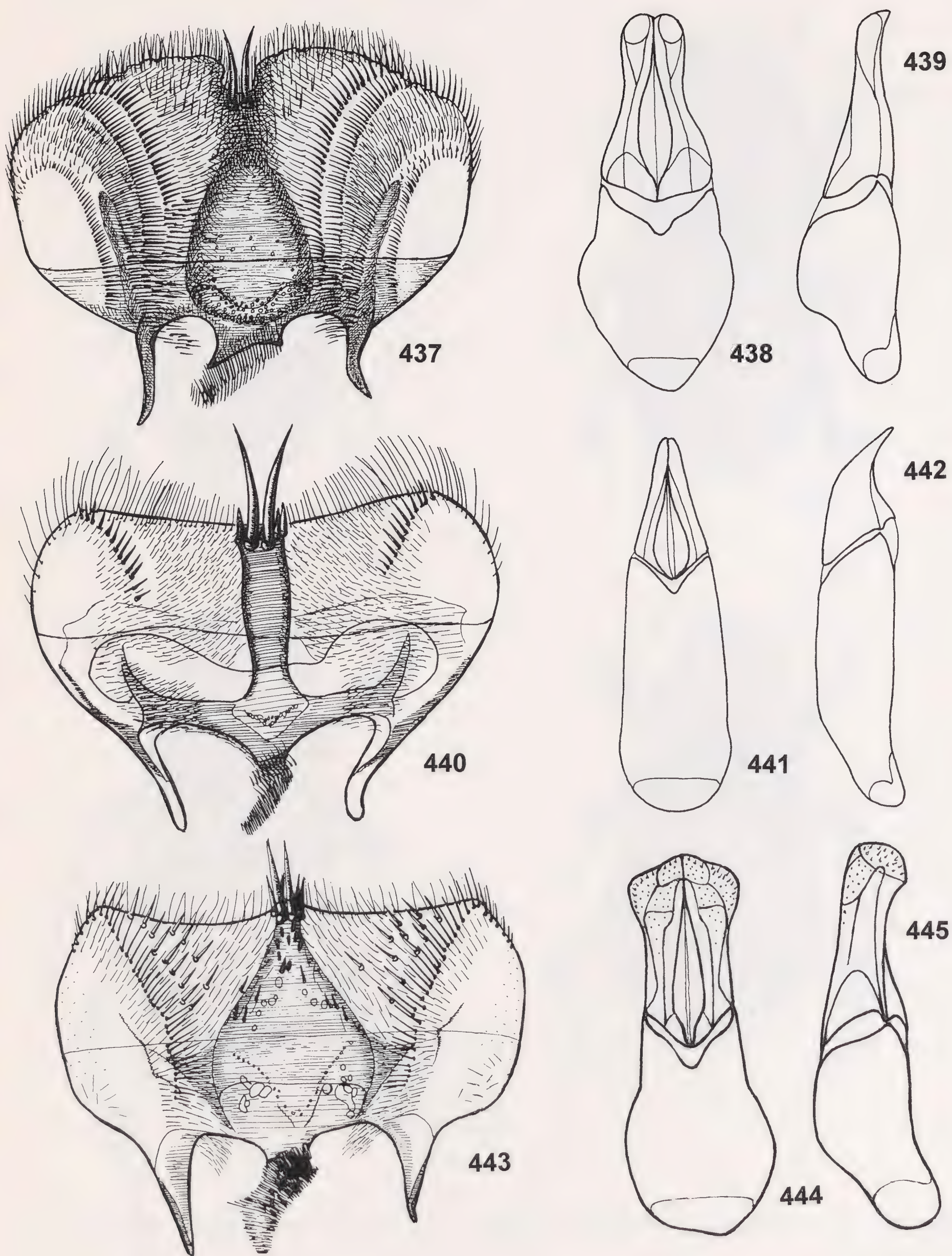
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Fig. 433. *Calocolobopterus senegalensis* (Klug, 1835) (male, length 11 mm) (Senegal; Dakar env.)

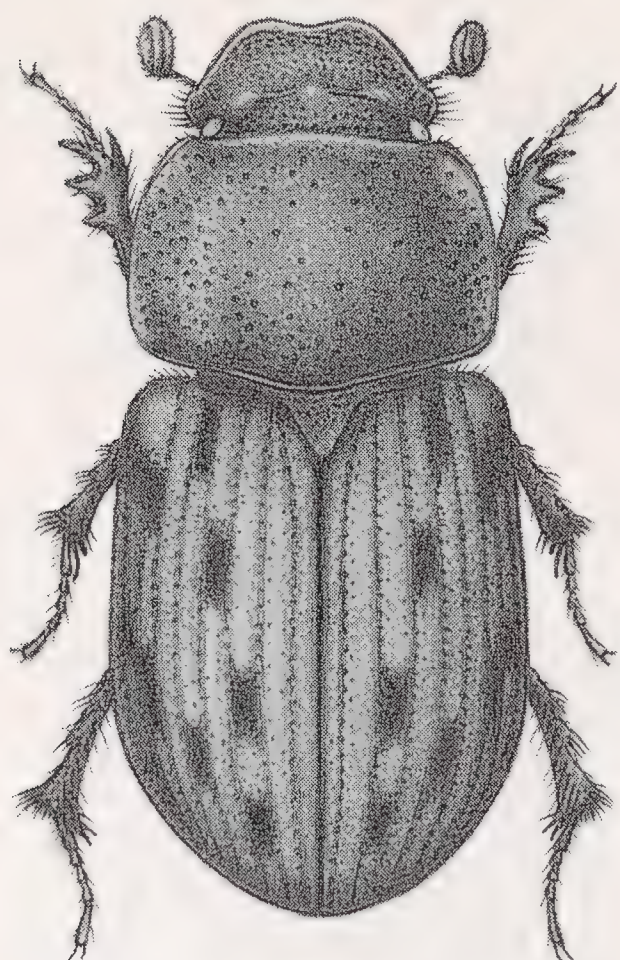
Fig. 434. *Candezeollus candezei* (Harold, 1868) (male, length 7 mm) (South Australia; [Adelaide])

Fig. 435. *Carinaulus vseteckai* (Tesar, 1945) (male, length 4.5 mm) (China; Yunnan, Weiboashan Mts., 2800-3000 m)

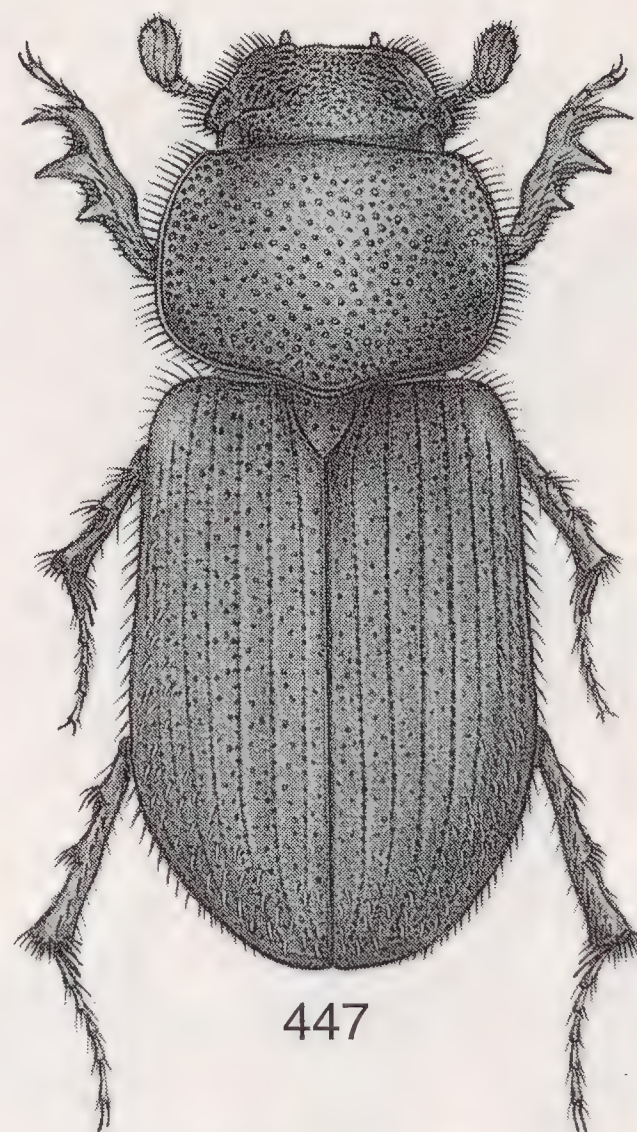
Fig. 436. *Cephalocyclus fuliginosus* (Harold, 1863) (male, length 6 mm) (Mexico; E.do Durango, Res. La Michilia; R.cho El Aleman)



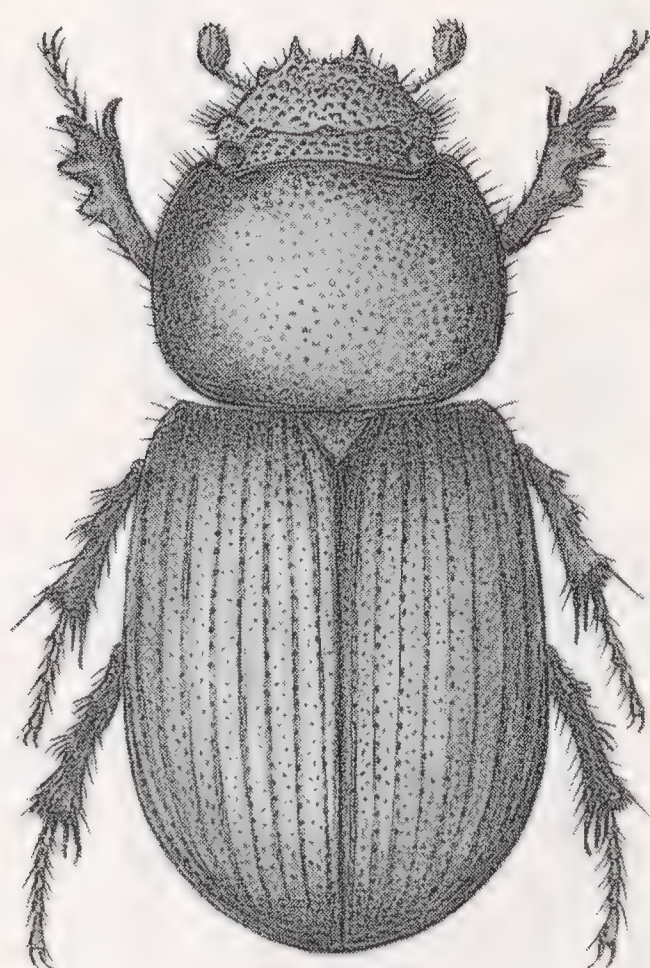
Figs 437-445. Epipharynx and aedeagus, dorsal and lateral view, of: 437-439 - *Calocolobopterus senegalensis* (Klug, 1835); 440-442 - *Candezeollus candezei* (Harold, 1868); 443-445 - *Carinaulus vseteckai* (Tesar, 1945)



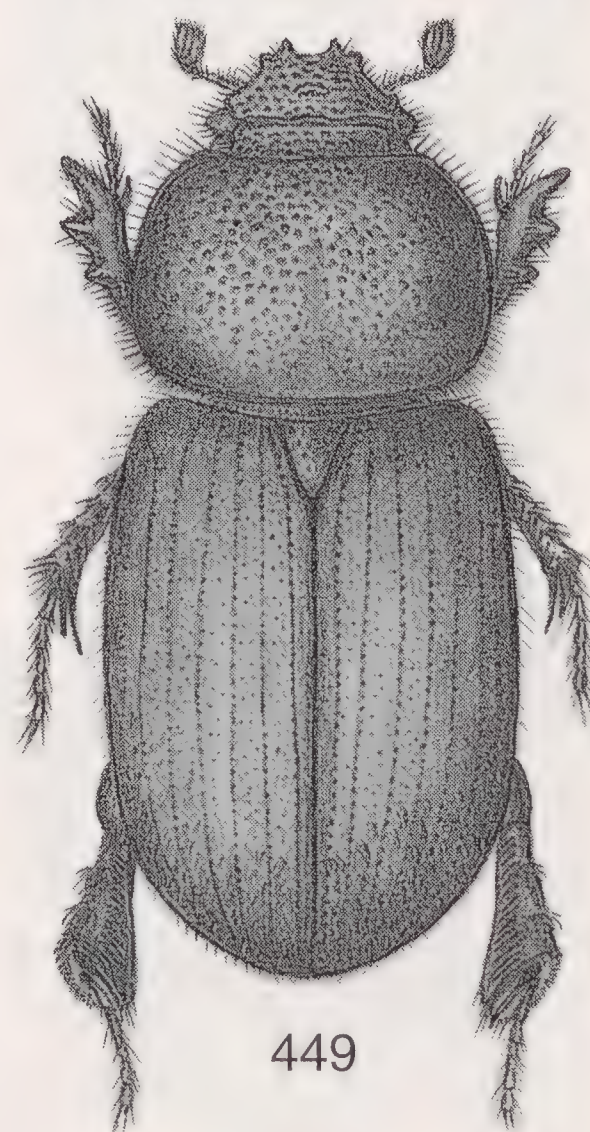
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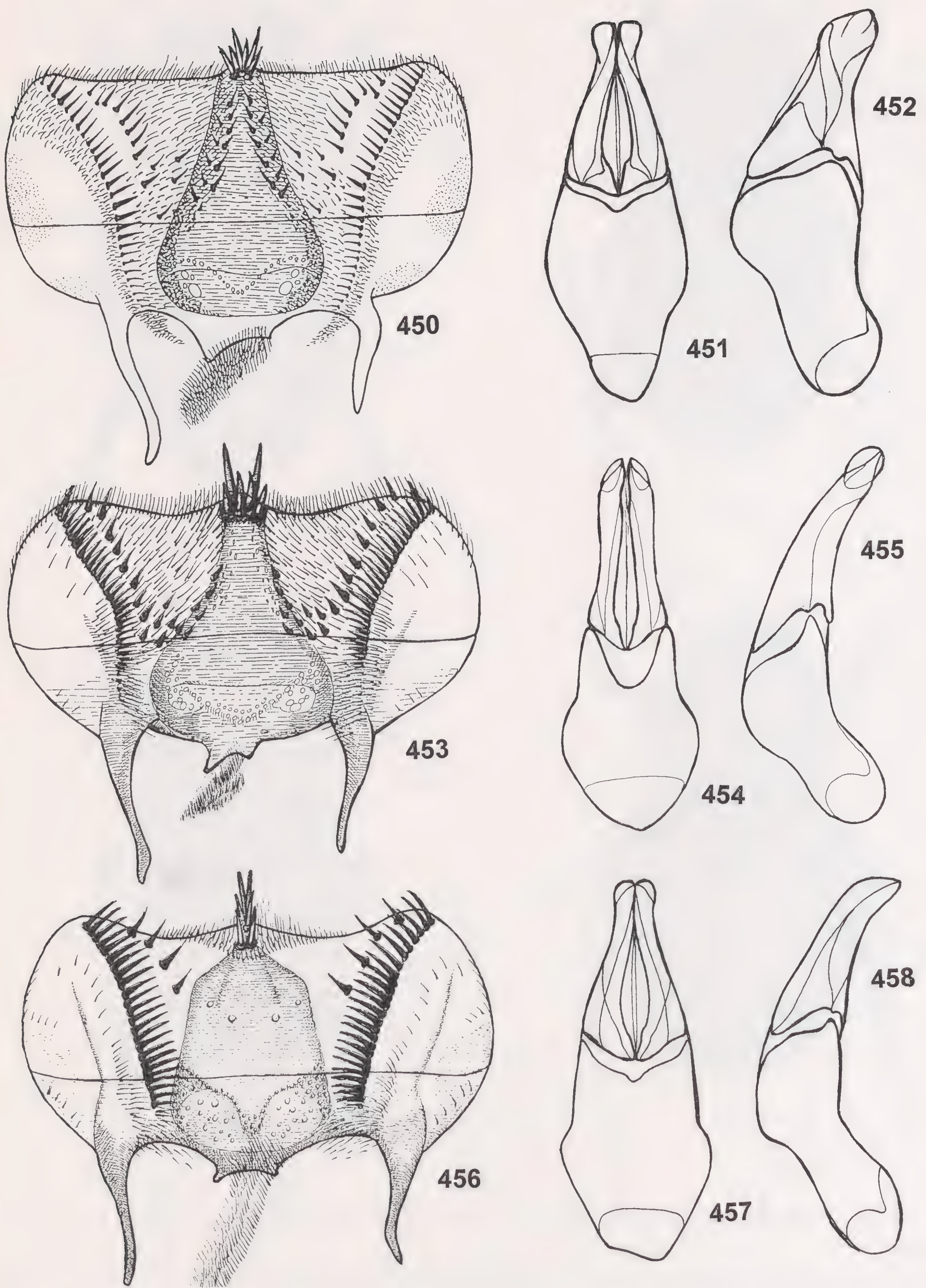
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Fig. 446. *Chilo thorax conspurcatus* (Linné, 1758) (male, length 5 mm) (Italy; Lazio, Rieti, Fiumata)

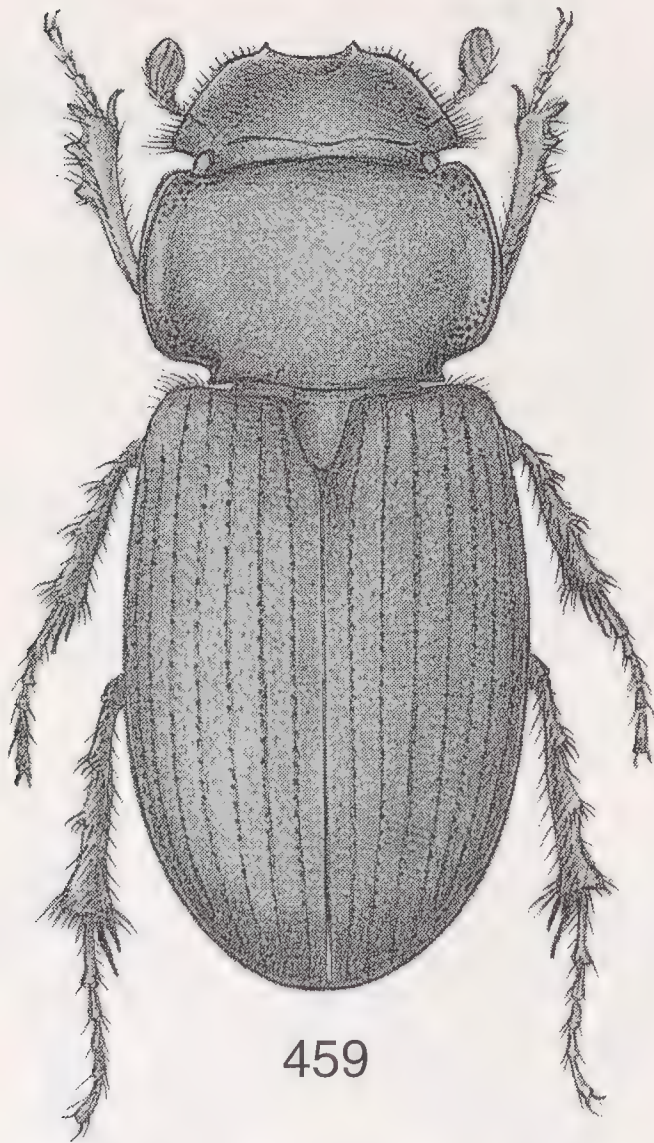
Fig. 447. *Cinacanthus militaris* (LeConte, 1858) (male, length 6 mm) (USA; California, Placerita Canyon)

Fig. 448. *Cnemargulus krulikowskyi* Semenov, 1903 (male, length 5 mm) (Turkmenistan; Merv, Imam-baba)

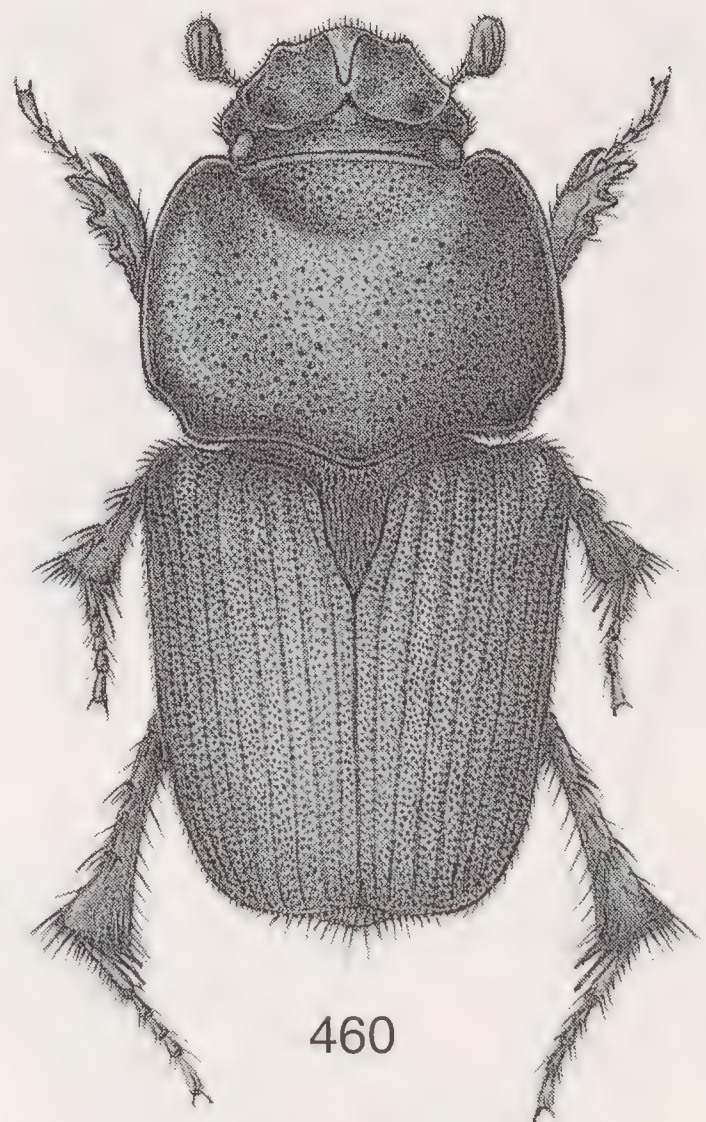
Fig. 449. *Cnemismus rufescens* (Motschulsky, 1845) (male, length 9 mm) (Kirgizstan; Kirgiz Steppe)



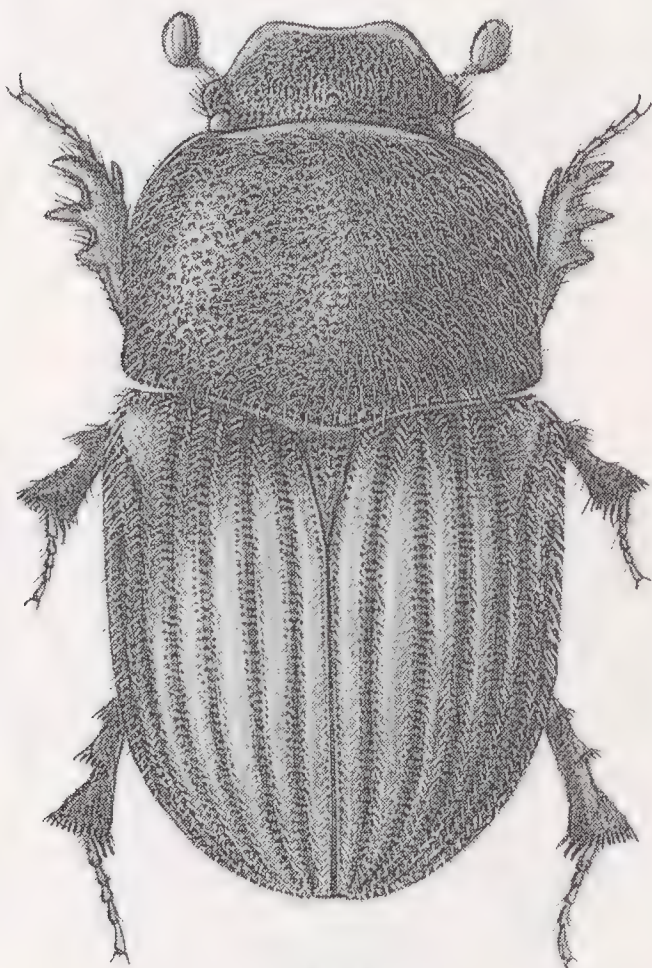
Figs 450-458. Epipharynx and aedeagus, dorsal and lateral view, of: 450-452 - *Cephalocyclus fuliginosus* (Harold, 1863); 453-455 - *Chilo thorax conspurcatus* (Linné, 1758); 456-458 - *Cinacanthus militaris* (LeConte, 1858)



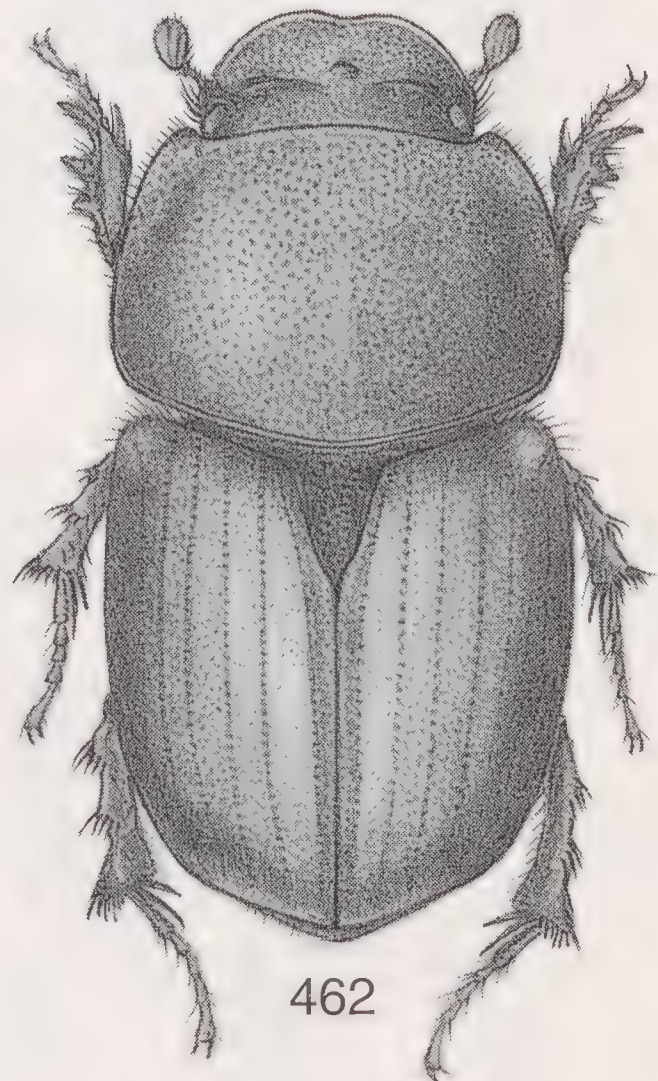
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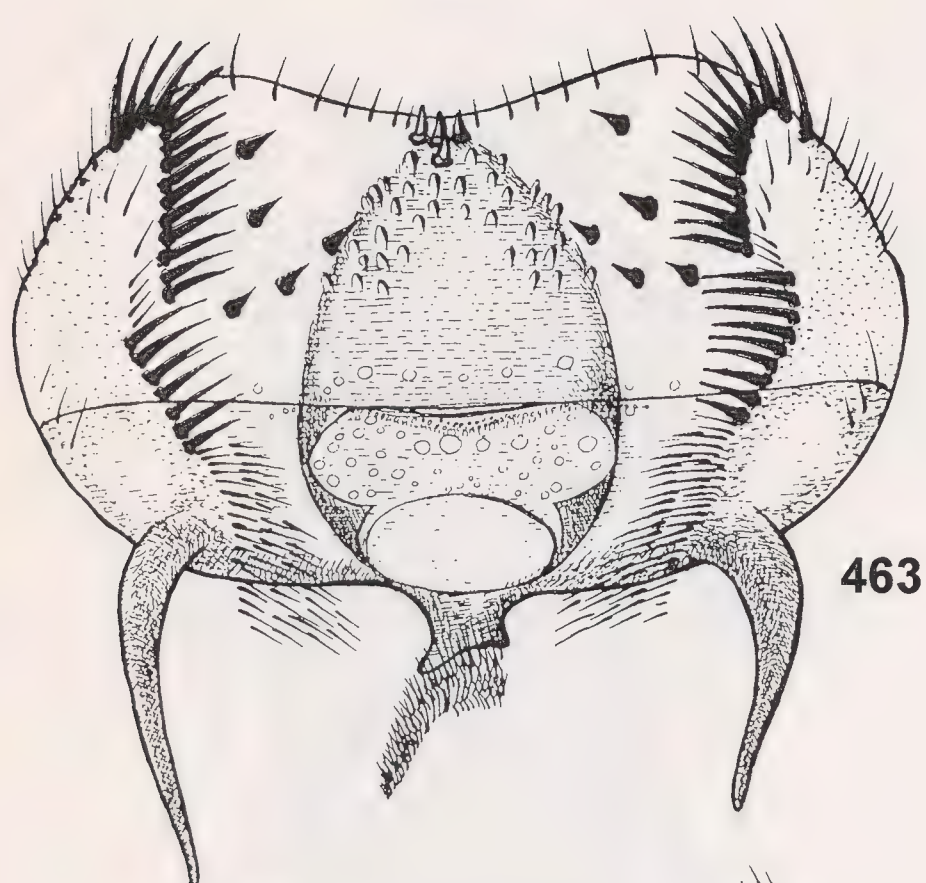
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Fig. 459. *Coelotrachelus kuntzeni* (A. Schmidt, 1913) (male, length 8 mm) (Mexico; E.do Mexico, Amecameca)

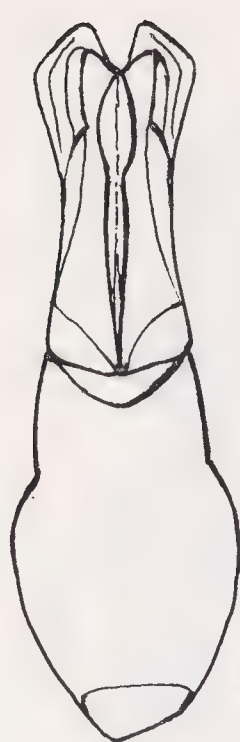
Fig. 460. *Colobopteridius renaudi* (Clément, 1958) (male, length 10 mm) (Equatorial Guinea, Rio Muni, Cristal Mts.)

Fig. 461. *Colobopteroides latus* (A. Schmidt, 1911) (male, length 4 mm) (Ethiopia; Ablo)

Fig. 462. *Colobopterus erraticus* (Linné, 1758) (male, length 7 mm) (Italy; Liguria, Savona, Monte San Giorgio)



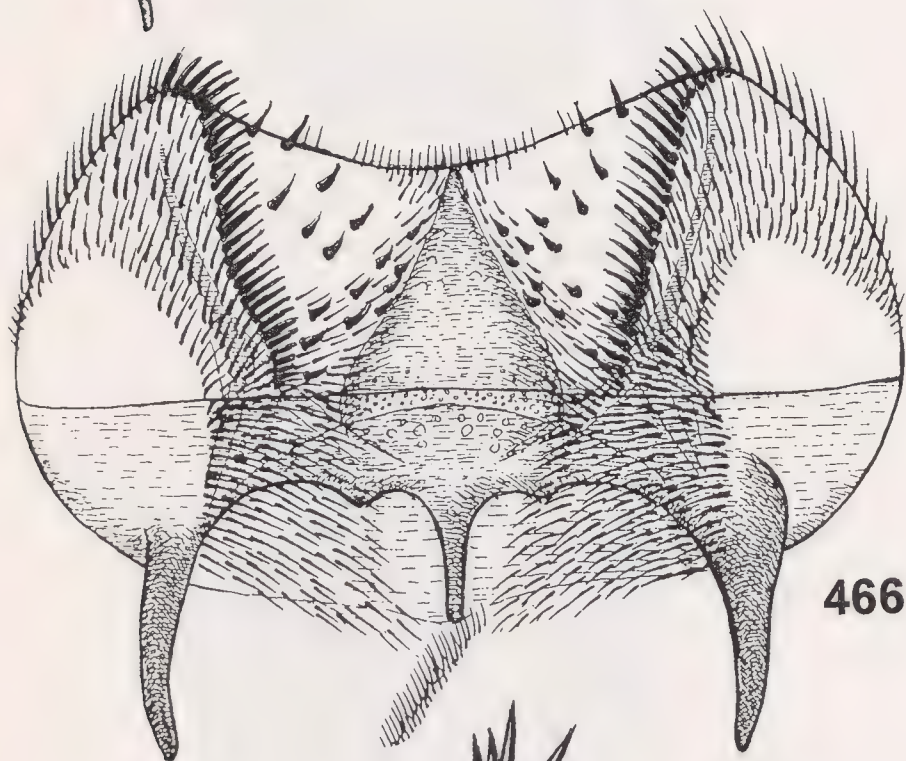
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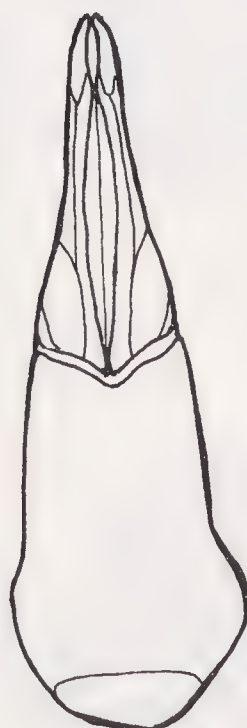
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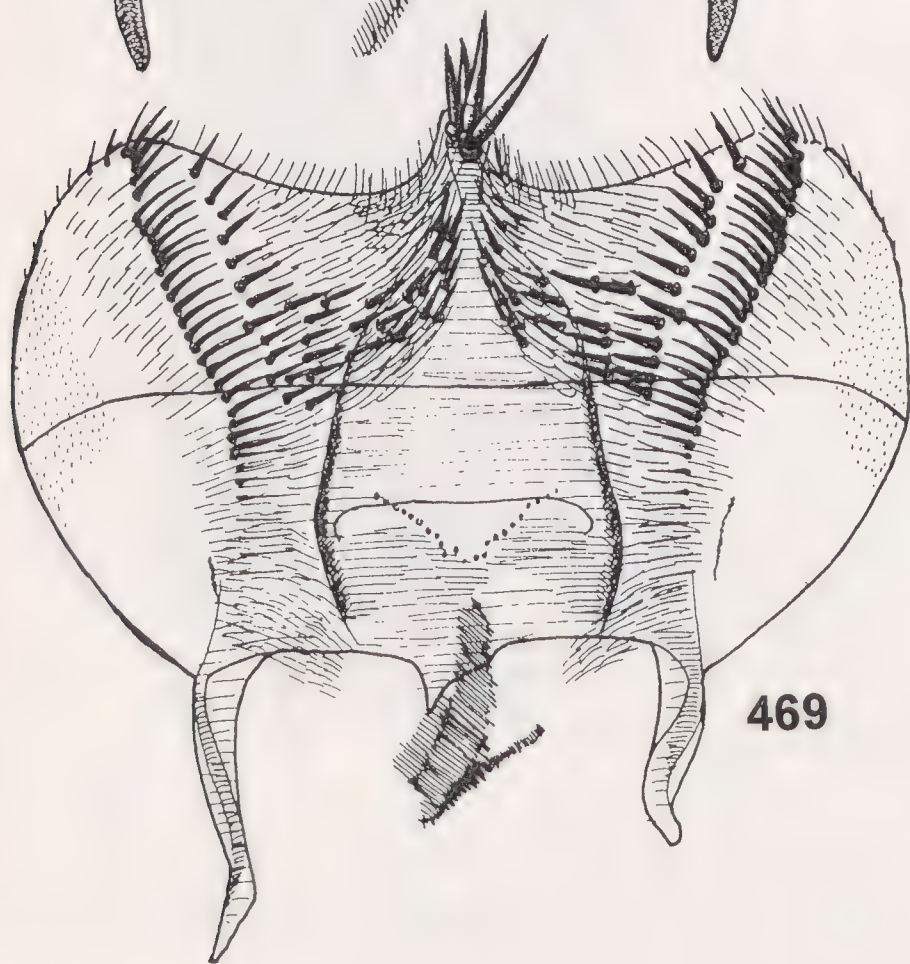
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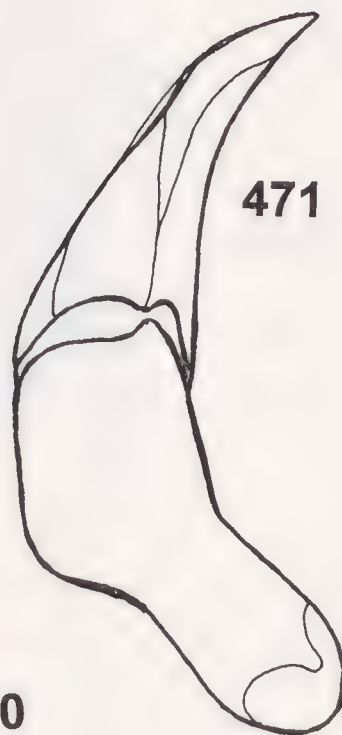
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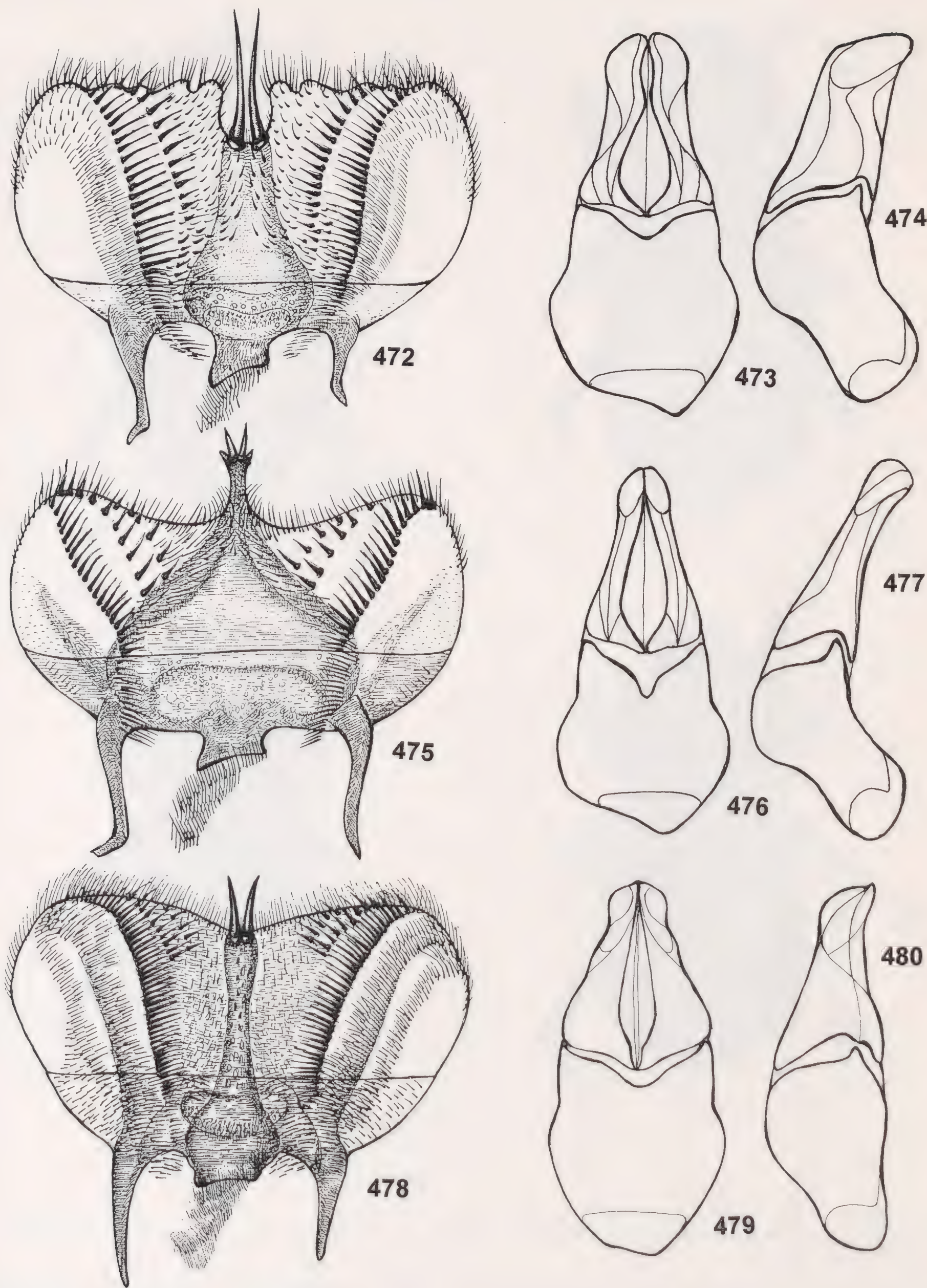


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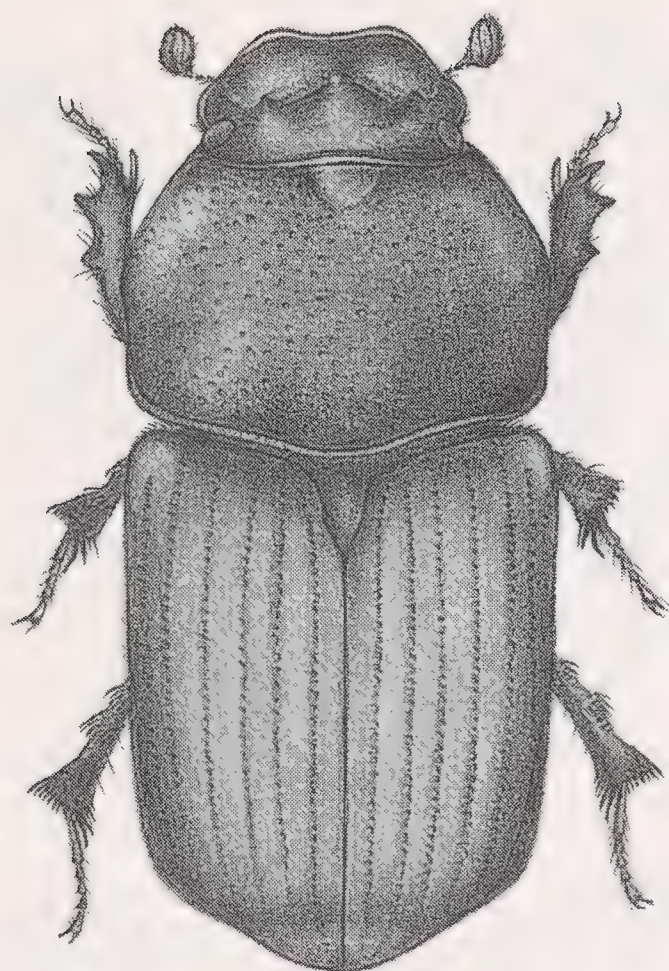


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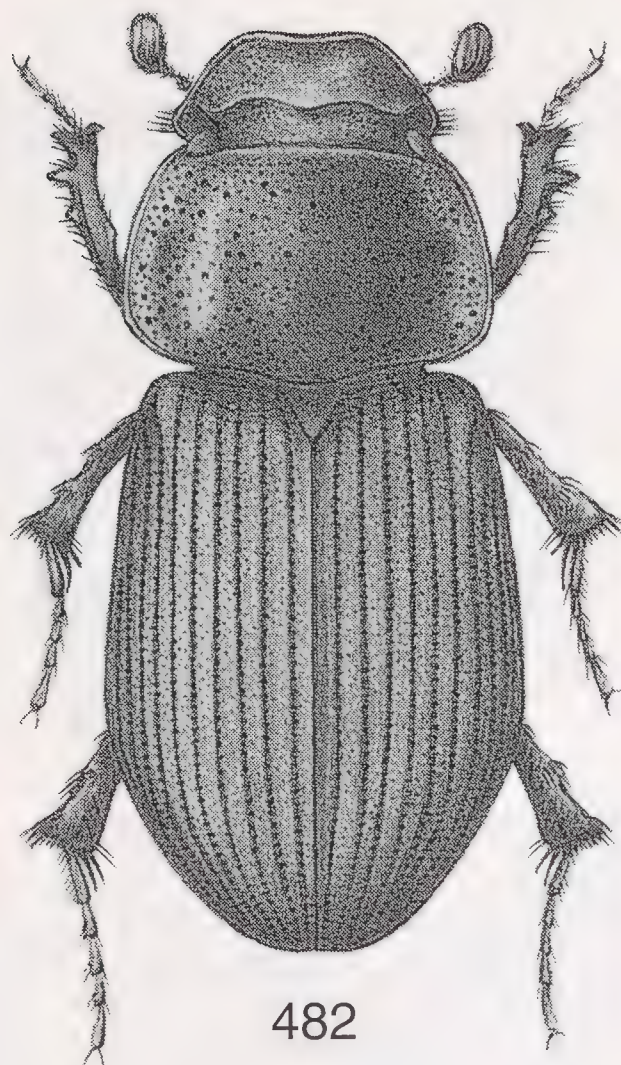
Figs 463-471. Epipharynx and aedeagus, dorsal and lateral view, of: 463-465 - *Cnemargulus krulikowskyi* Semenov, 1903; 466-468 - *Cnemisus rufescens* (Motschulsky, 1845); 469-471 - *Coelotrachelus kuntzeni* (A. Schmidt, 1913)



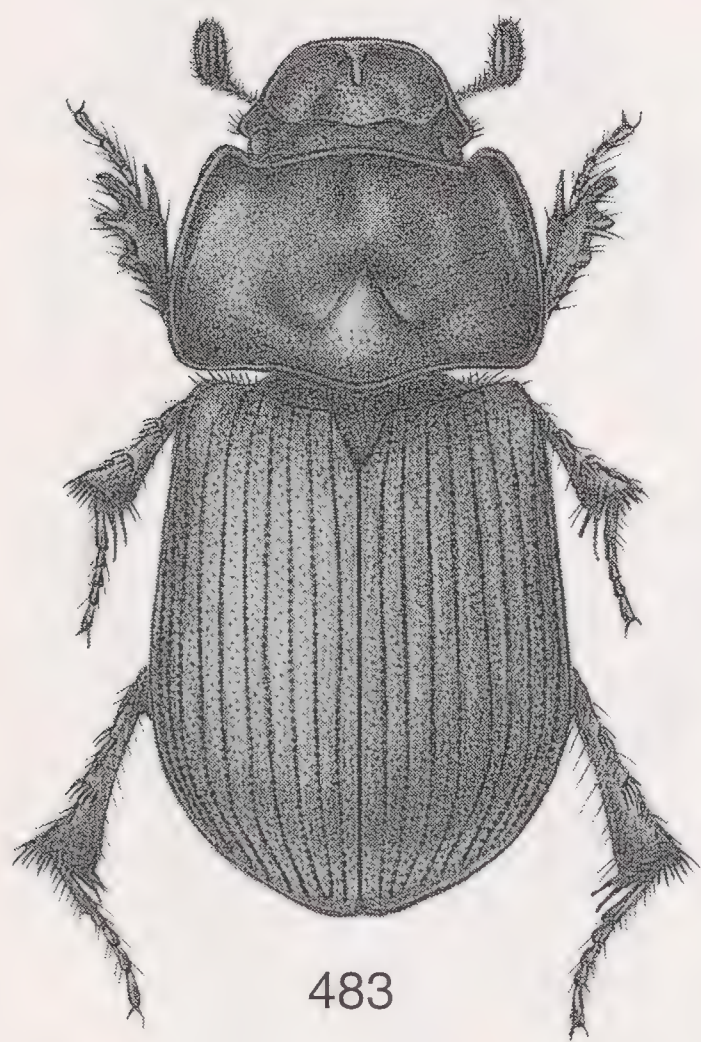
Figs 472-480. Epipharynx and aedeagus, dorsal and lateral view, of: 472-474 - *Colobopteridius renaudi* (Clément, 1958); 475-477 - *Colobopteroides latus* (A. Schmidt, 1911); 478-480 - *Colobopterus erraticus* (Linné, 1758)



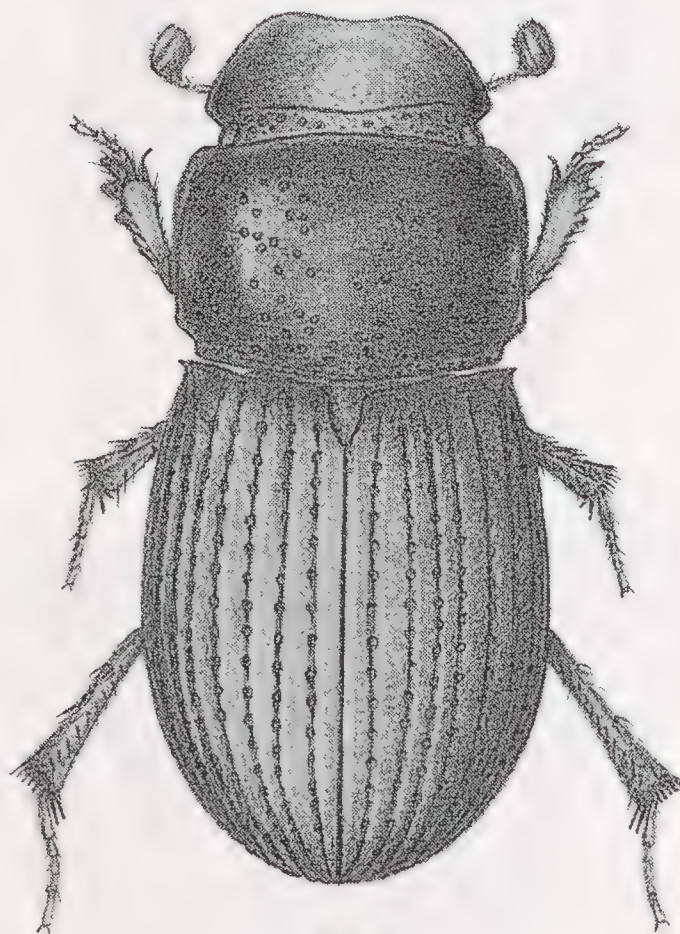
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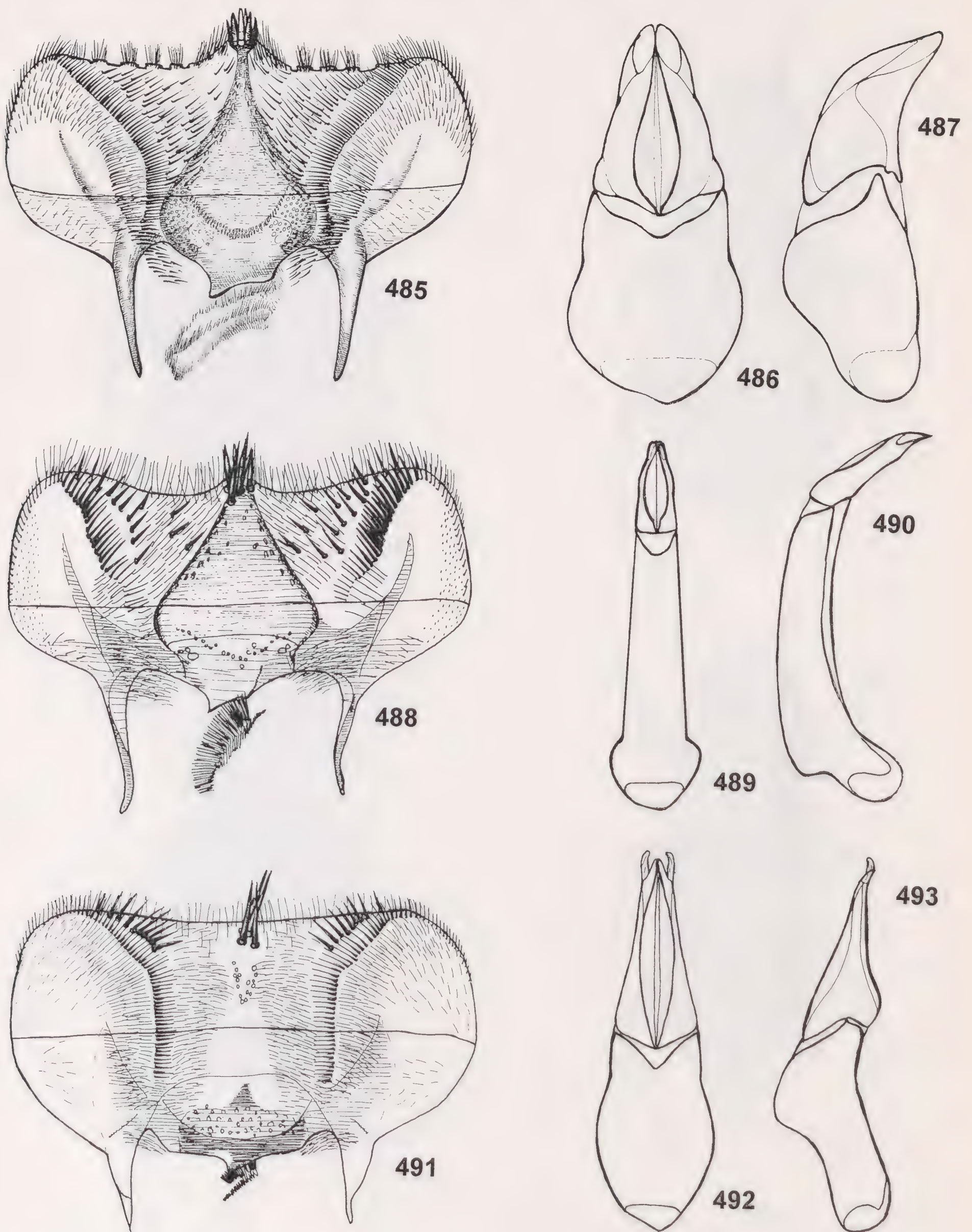
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Fig. 481. *Coprimorphus scrutator* (Herbst, 1789) (male, length 15 mm) (Italy; Liguria, Genova, Passo Cento Croci)

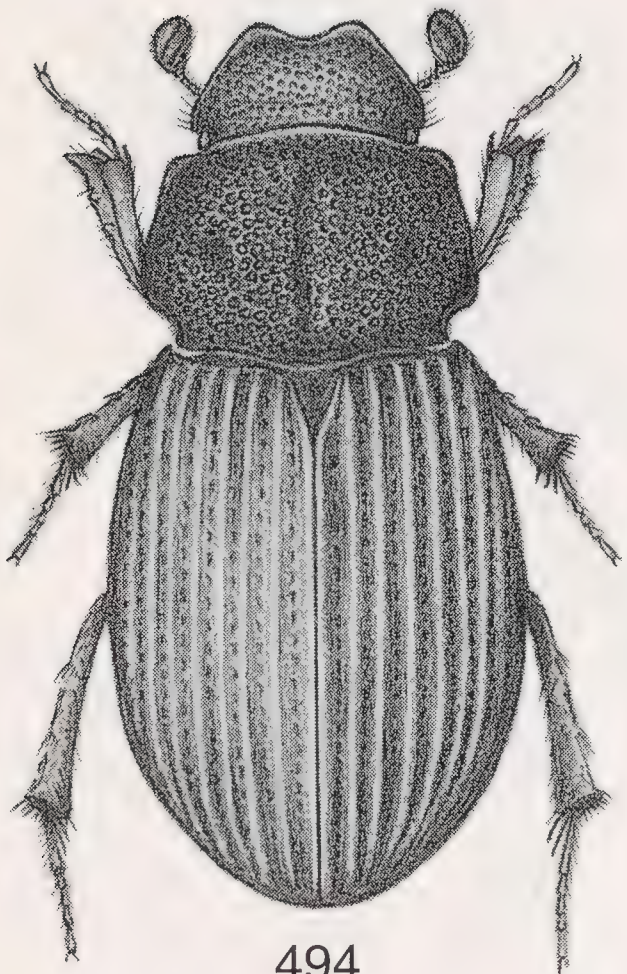
Fig. 482. *Coptochiroides subcostatus* (Kolbe, 1886) (male, length 5 mm) (North Korea; Kangvon-do Prov., Kungeng-san Mts.)

Fig. 483. *Craterocyphus magnificus* (A. Schmidt, 1909) (male, length 11.5 mm) (Kenya; New Moshi, S.E. Kilimandjaro Mt.)

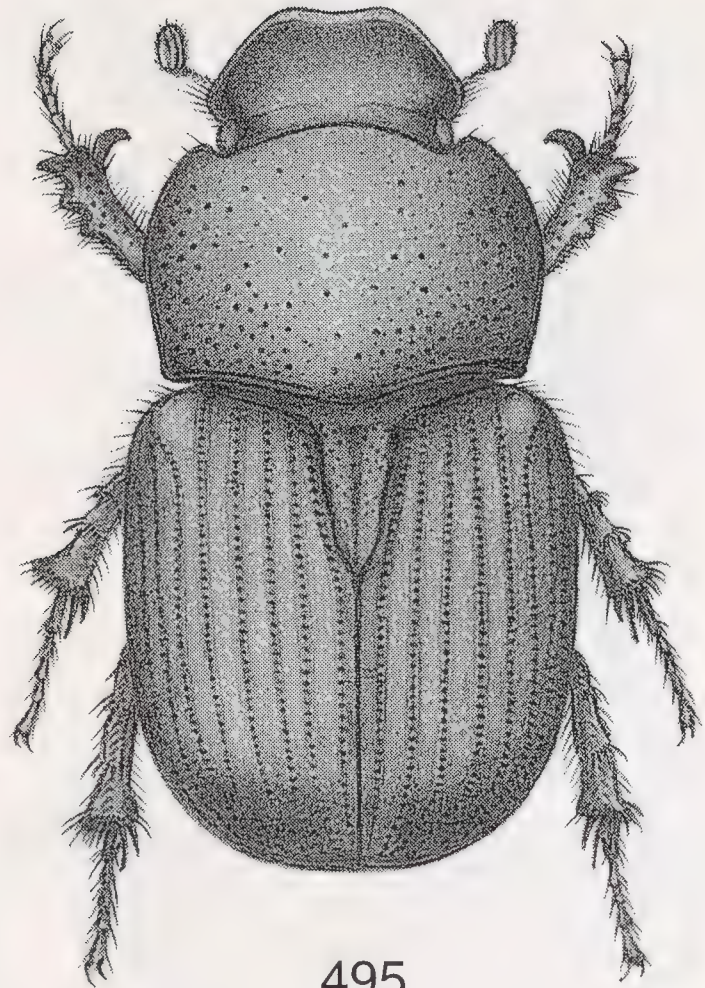
Fig. 484. *Dialytellus humeralis* (LeConte, 1878) (male, length 4 mm) (USA; Mariland, Garret Co., Oakland)



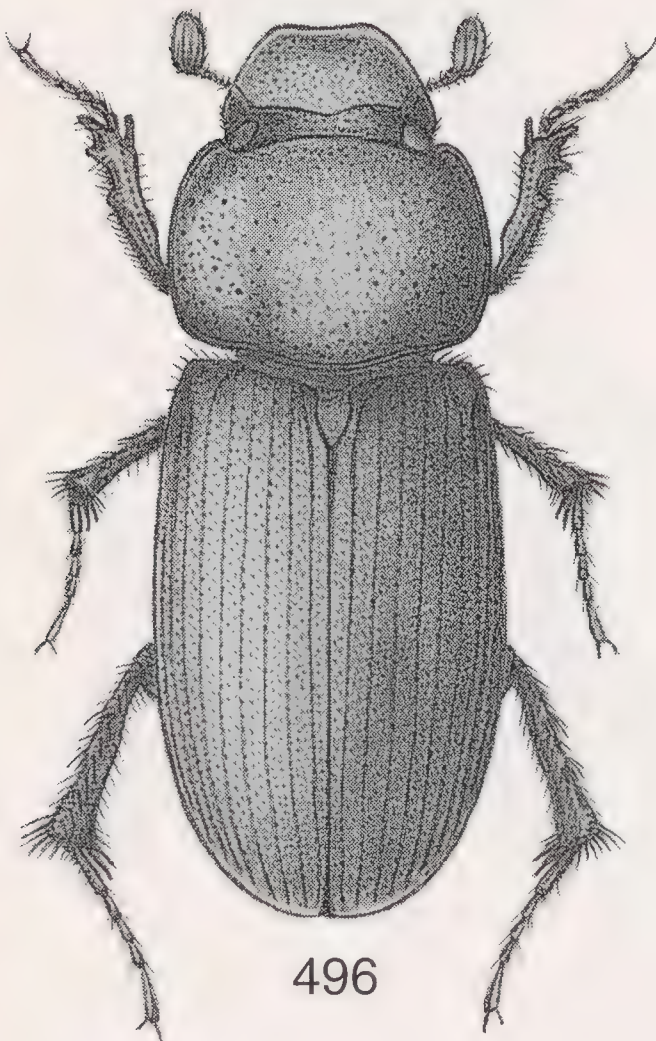
Figs 485-493. Epipharynx and aedeagus, dorsal and lateral view, of: 485-487 - *Coprimorphus scrutator* (Herbst, 1789); 488-490 - *Coptochiroides subcostatus* (Kolbe, 1886); 491-493 - *Craterocyphus magnificus* (A. Schmidt, 1909)



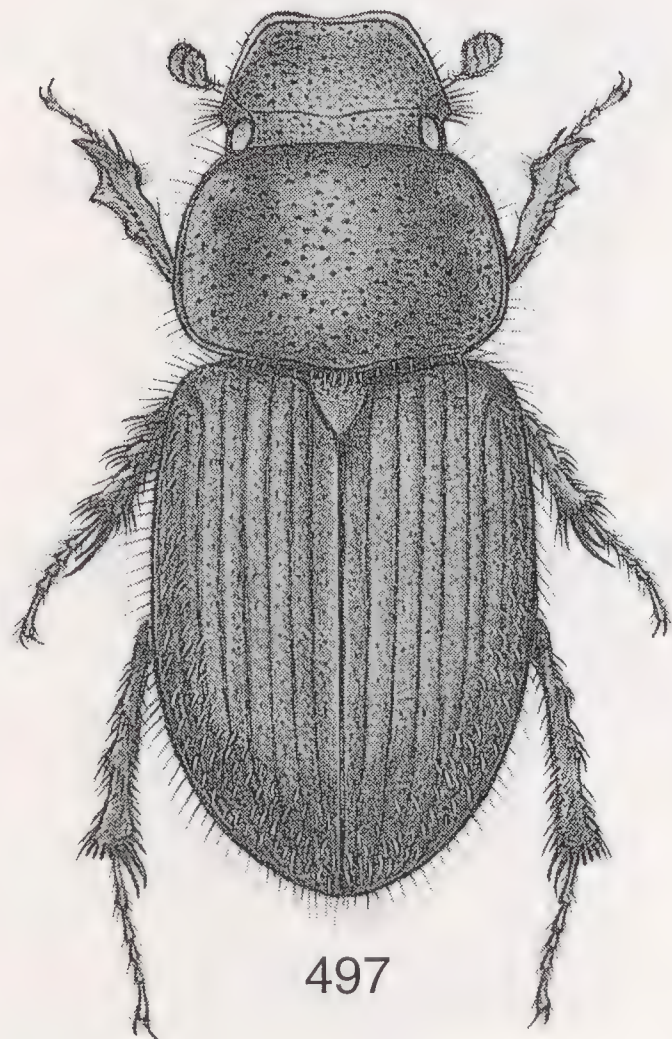
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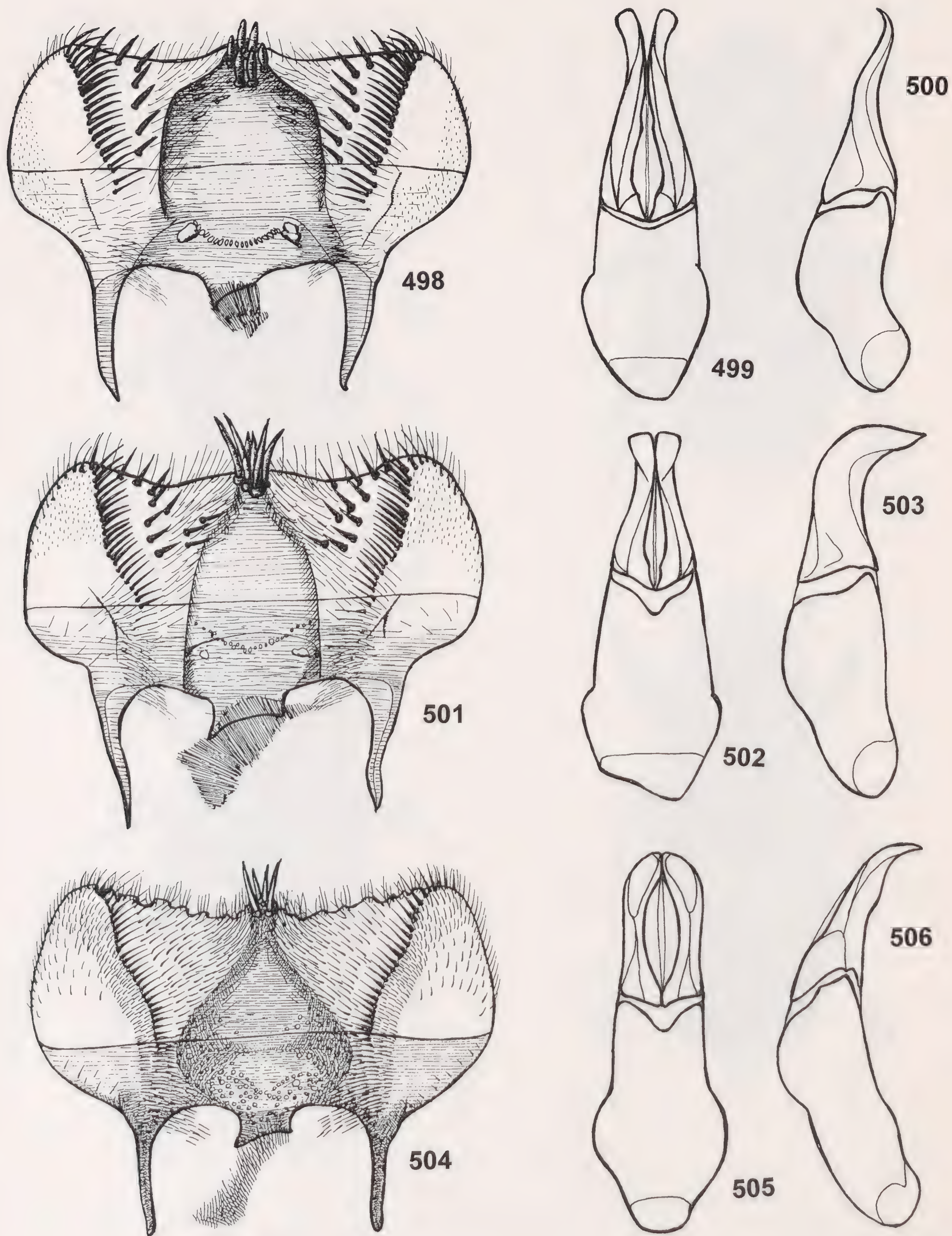
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Fig. 494. *Dialytes striatulus* (Say, 1825) (male, length 5 mm) (USA; Pennsylvania, Jefferson Co.)

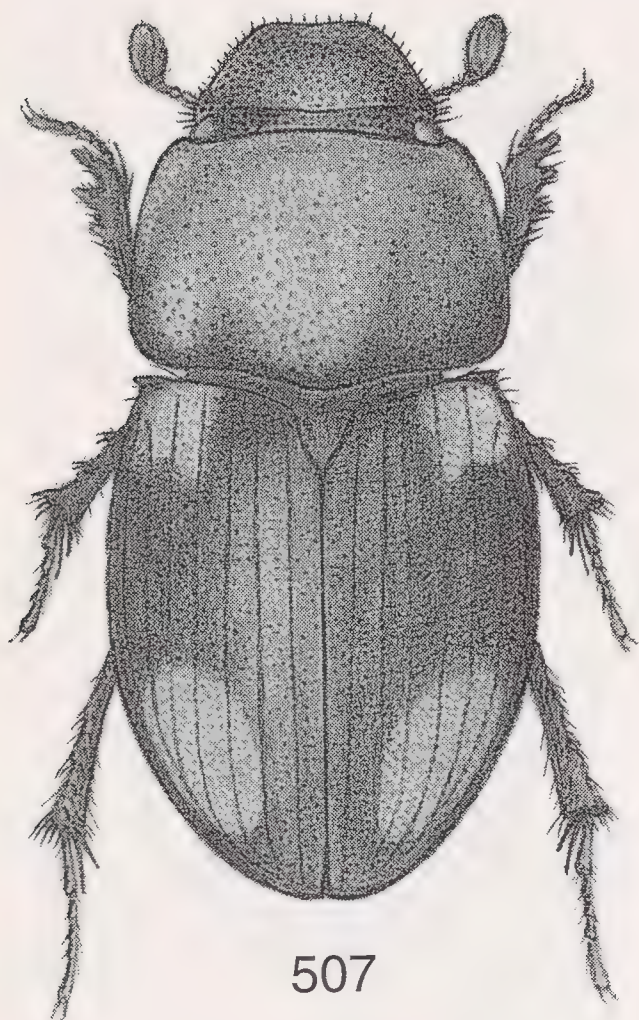
Fig. 495. *Diapterna hamata* (Say, 1824) (male, length 7 mm) (Canada; Alberta, Edmonton)

Fig. 496. *Doaphius gracilioides* (Paulian, 1942) (male, length 5 mm) (Ethiopia; Harar Prov., Errer)

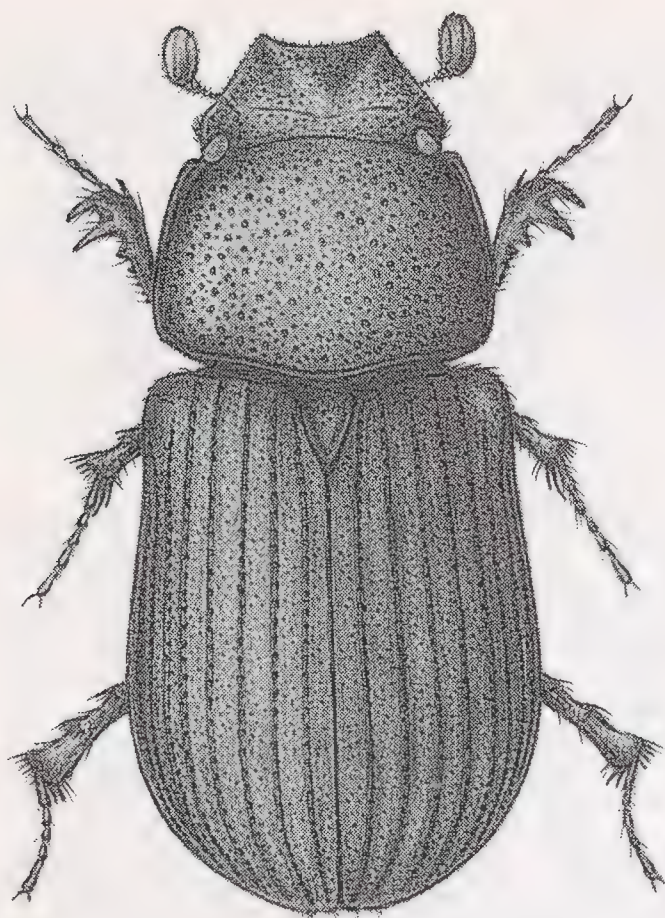
Fig. 497. *Drepanocanthoides walshi* (Horn, 1870) (male, length 5 mm) (USA; North Dakota, Richland Co.)



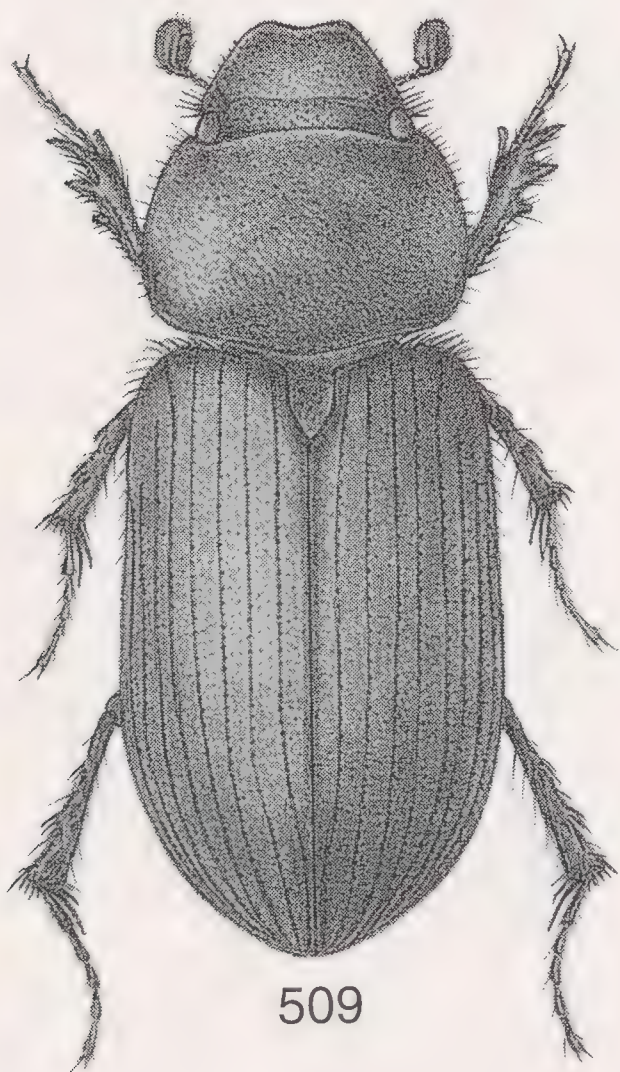
Figs 498-506. Epipharynx and aedeagus, dorsal and lateral view, of: 498-500 - *Dialytellus humeralis* (LeConte, 1878); 501-503 - *Dialytes striatulus* (Say, 1825); 504-506 - *Diapterna hamata* (Say, 1824)



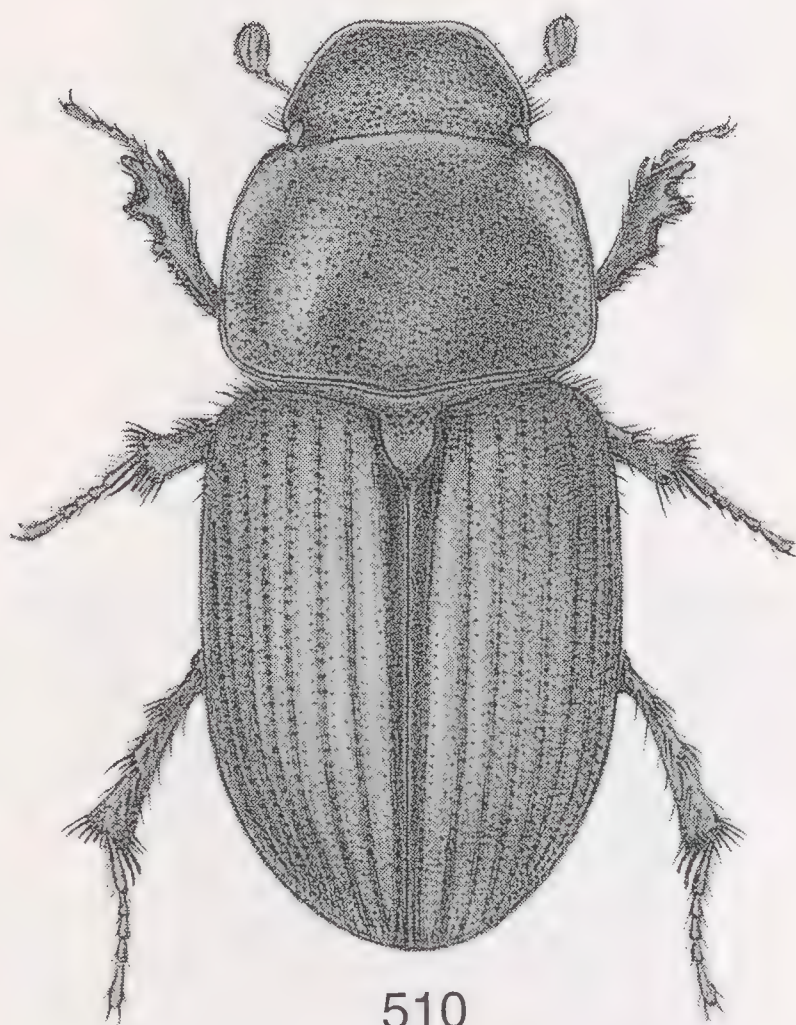
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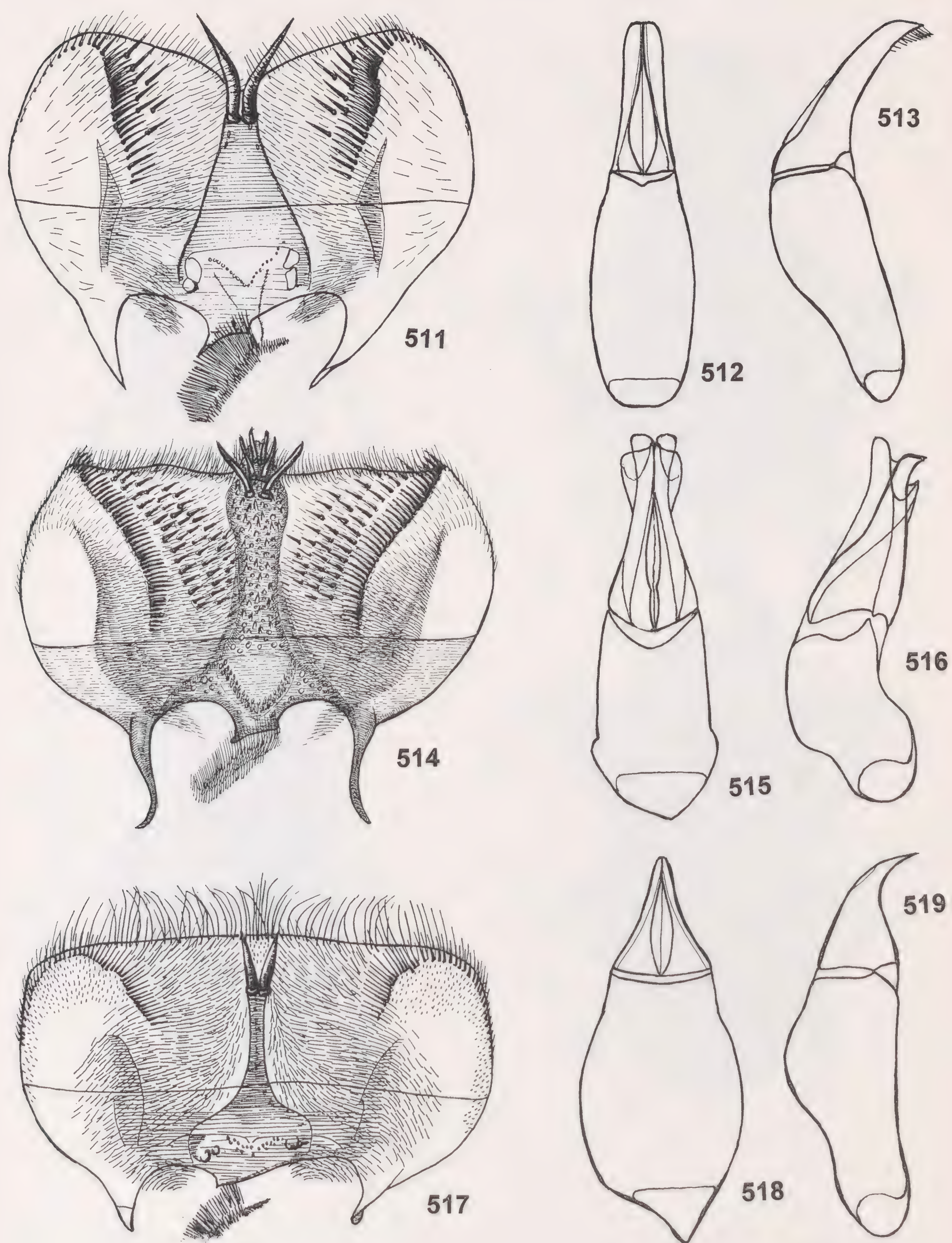
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Fig. 507. *Emadiellus rufopustulatus* (Wiedemann, 1823) (male, length 5 mm) (Sri Lanka; Anu Distr., Hunuruwilagama)

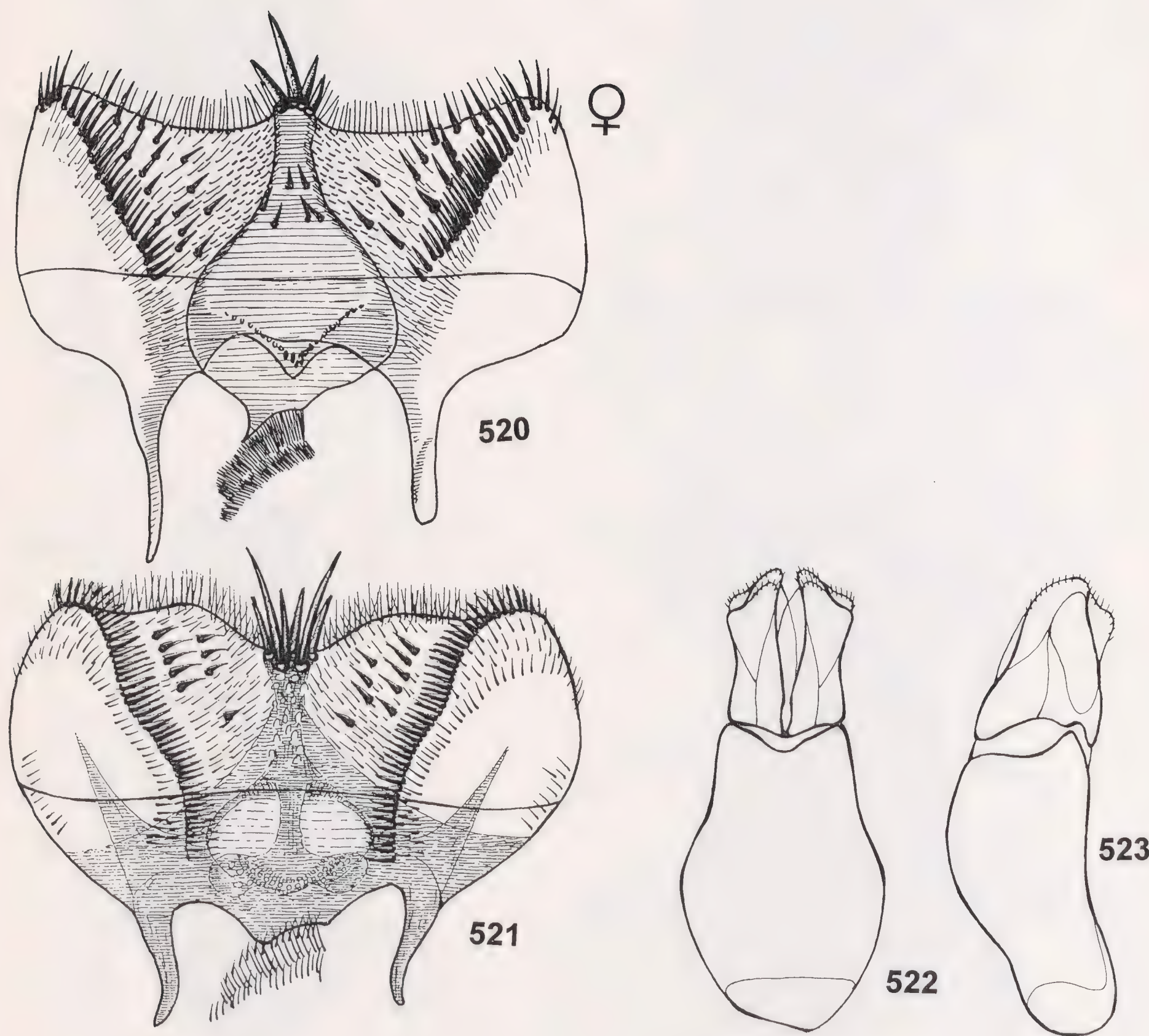
Fig. 508. *Erytodes confirmatus* (A. Schmidt, 1916) (female, length 5.5 mm) (India; Madras Pres., N. Coorg)

Fig. 509. *Erytus cognatus* (Fairmaire, 1860) (male, length 5 mm) (Egypt; Cairo env.)

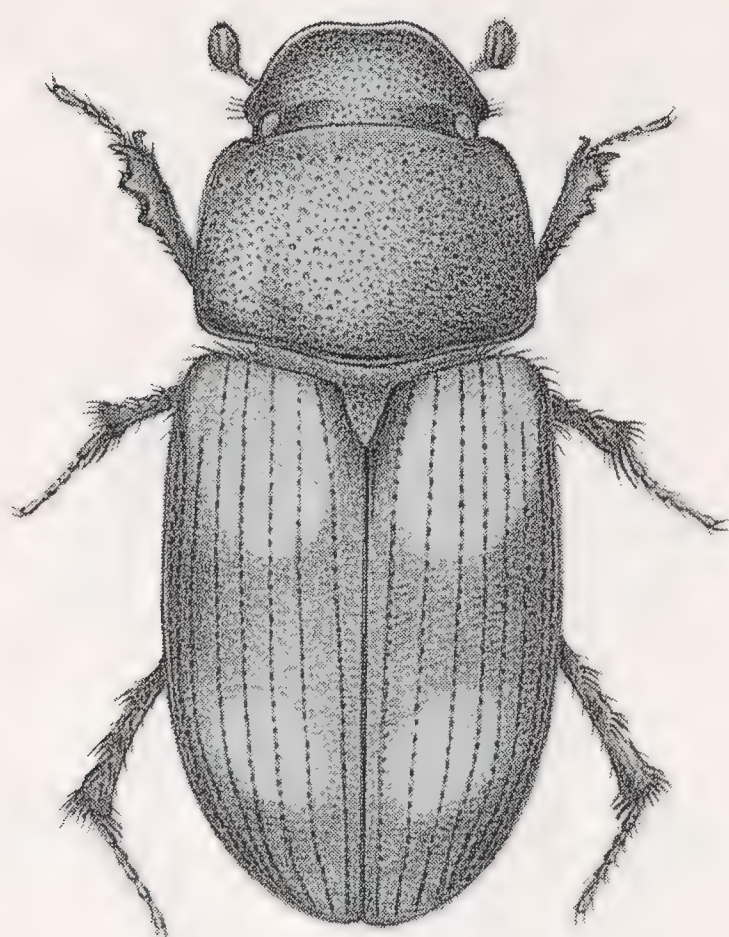
Fig. 510. *Esymus merdarius* (Fabricius, 1775) (male, length 4 mm) (Italy; Calabria, Reggio di Calabria, Aspromonte: Cippo Garibaldi)



Figs 511-519. Epipharynx and aedeagus, dorsal and lateral view, of: 511-513 - *Doaphius gracilioides* (Paulian, 1942); 514-516 - *Drepanocanthoides walshi* (Horn, 1870); 517-519 - *Emadiellus rufopustulatus* (Wiedemann, 1823)



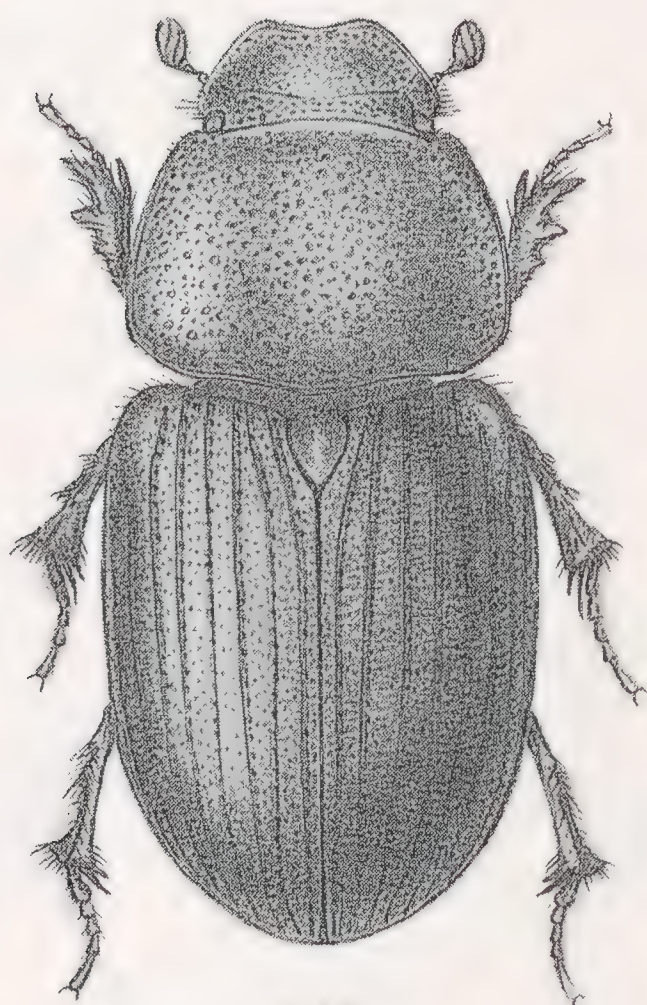
Figs 520-523. Epipharynx and aedeagus, dorsal and lateral view, of: 520 - *Erytodes confirmatus* (A. Schmidt, 1916); 521-523 - *Erytus cognatus* (Fairmaire, 1860)



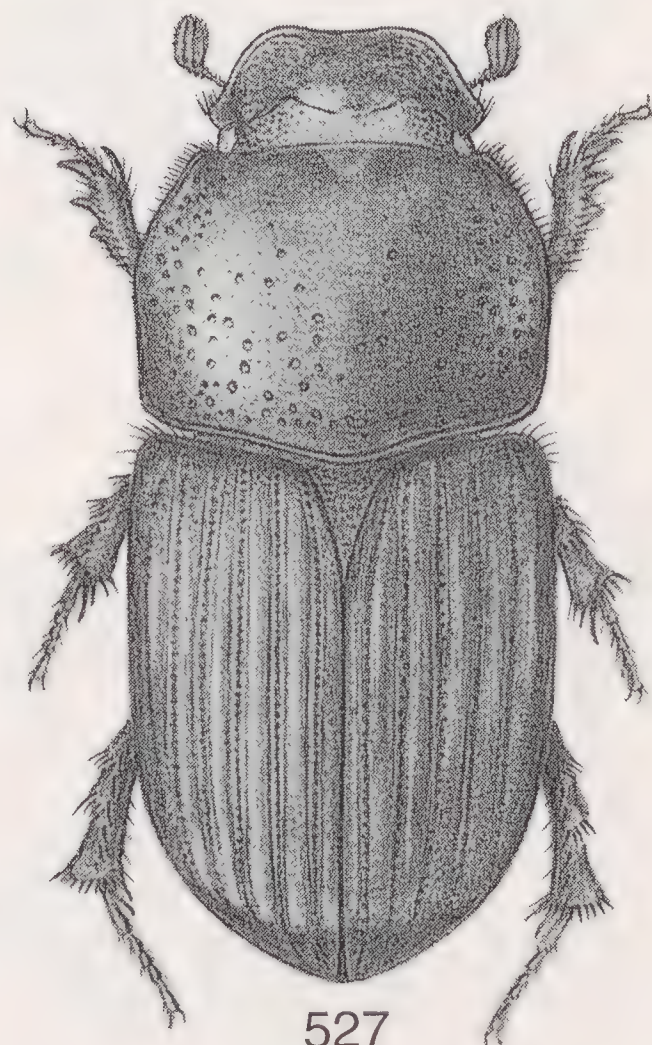
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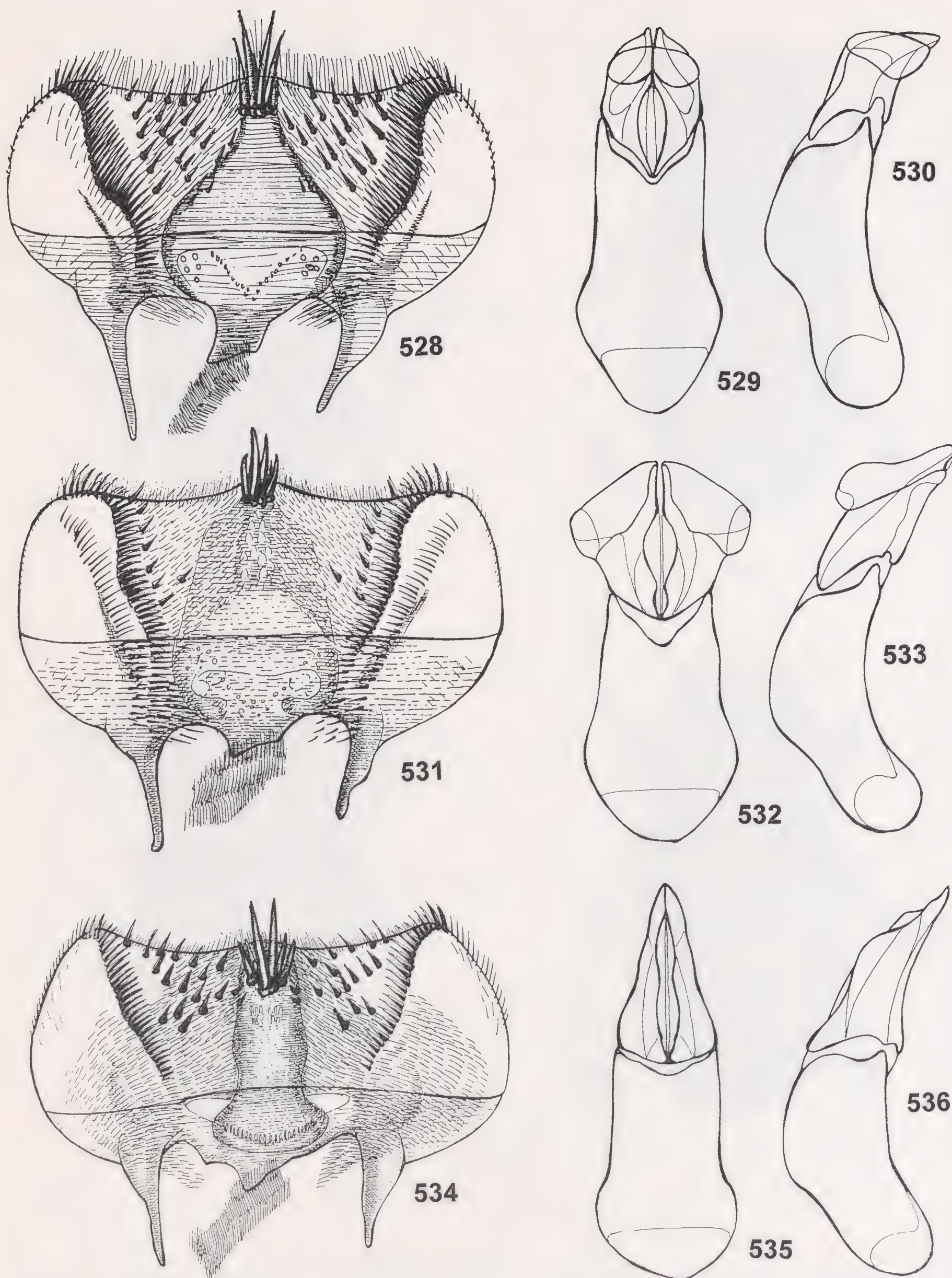
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Fig. 524. *Eudolus quadriguttatus* (Herbst, 1783) (male, length 4 mm) (Italy; Puglia, dintorni di Bari)

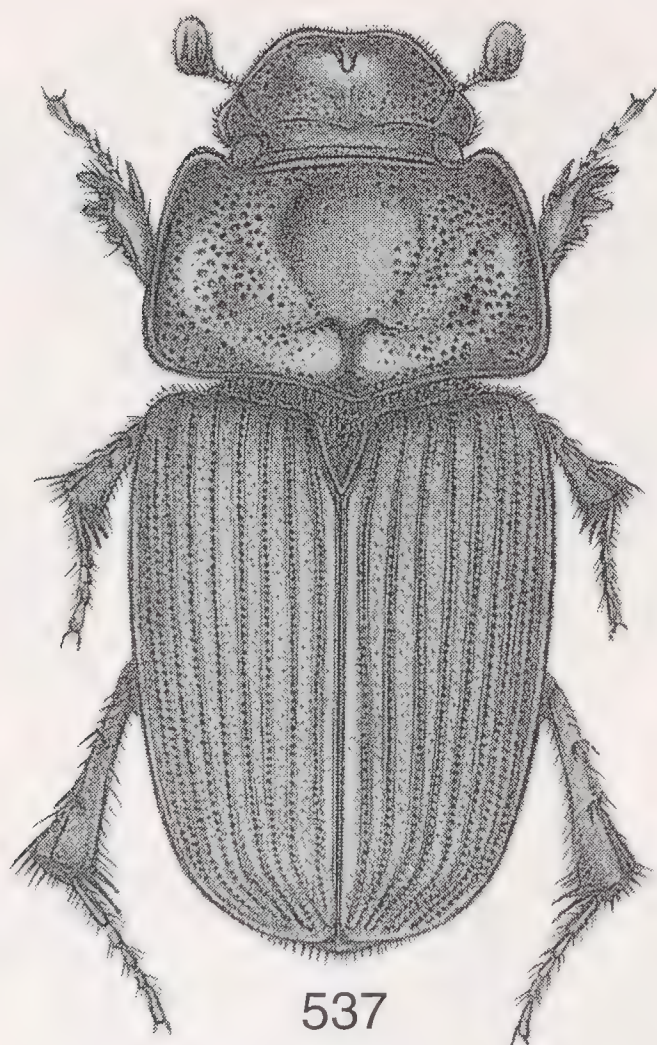
Fig. 525. *Euheptaulacus carinatus* (Germar, 1824) (male, length 5 mm) (Italy; Piemonte, Passo del Moncenisio)

Fig. 526. *Euorodalus coenosus* (Panzer, 1798) (male, length 4 mm) (Belgium; Antwerp env.)

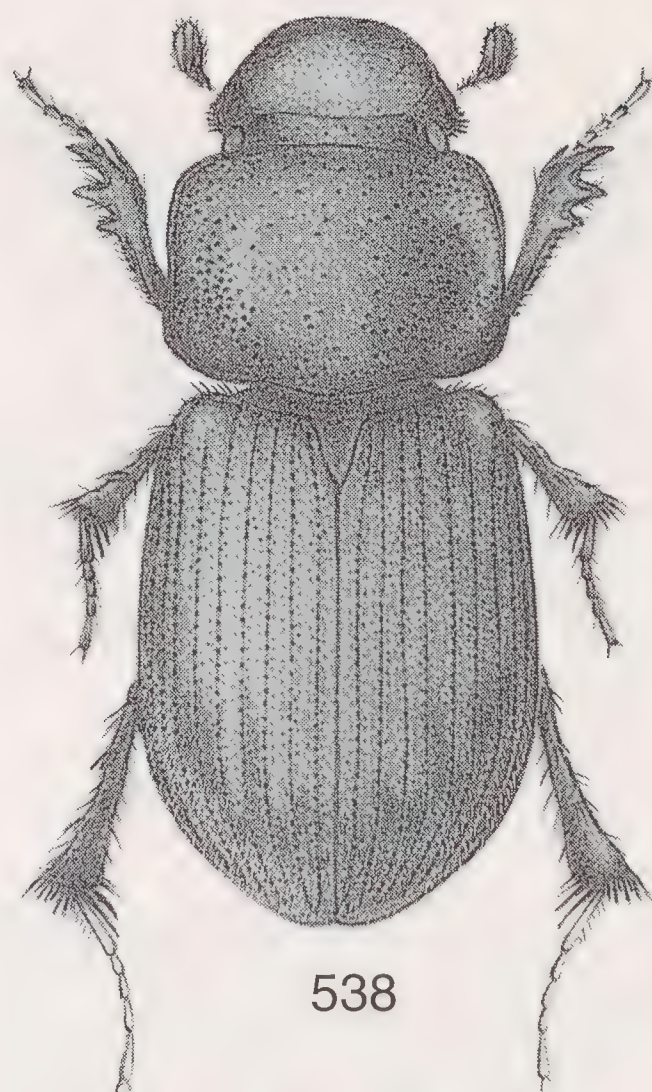
Fig. 527. *Eupleurus subterraneus* (Linné, 1758) (male, length 7 mm) (Italy; Piemonte, Cuneo, Entracque)



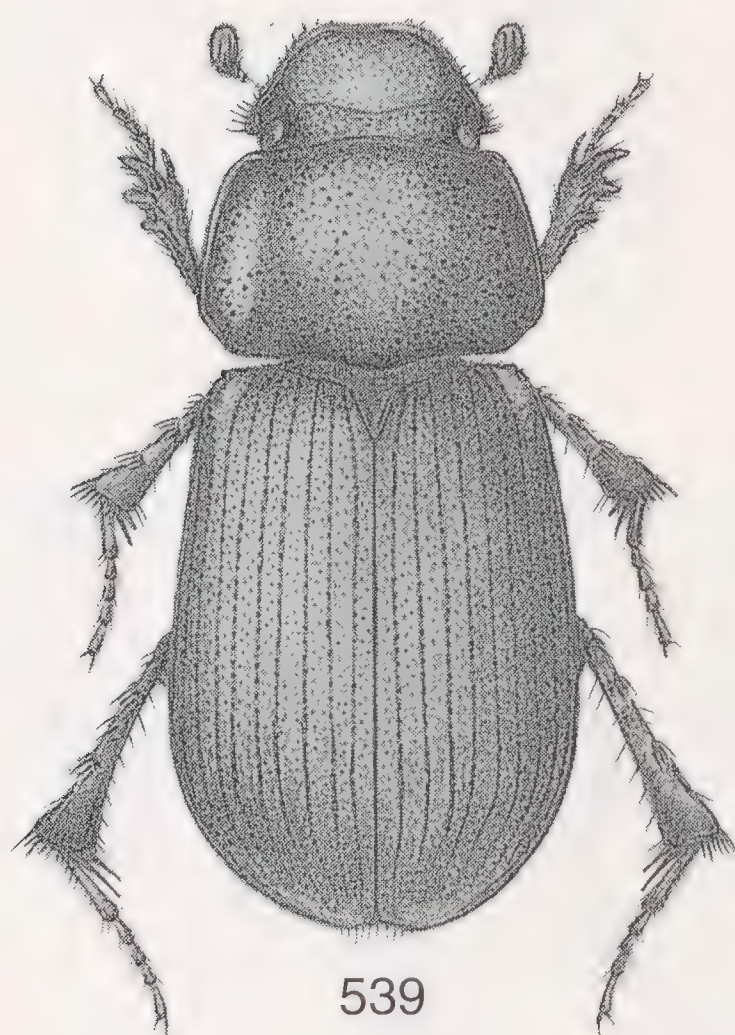
Figs 528-536. Epipharynx and aedeagus, dorsal and lateral view, of: 528-530 - *Esymus merdarius* (Fabricius, 1775); 531-533 - *Eudolus quadriguttatus* (Herbst, 1783); 534-536 - *Euheptaulacus carinatus* (Germar, 1824)



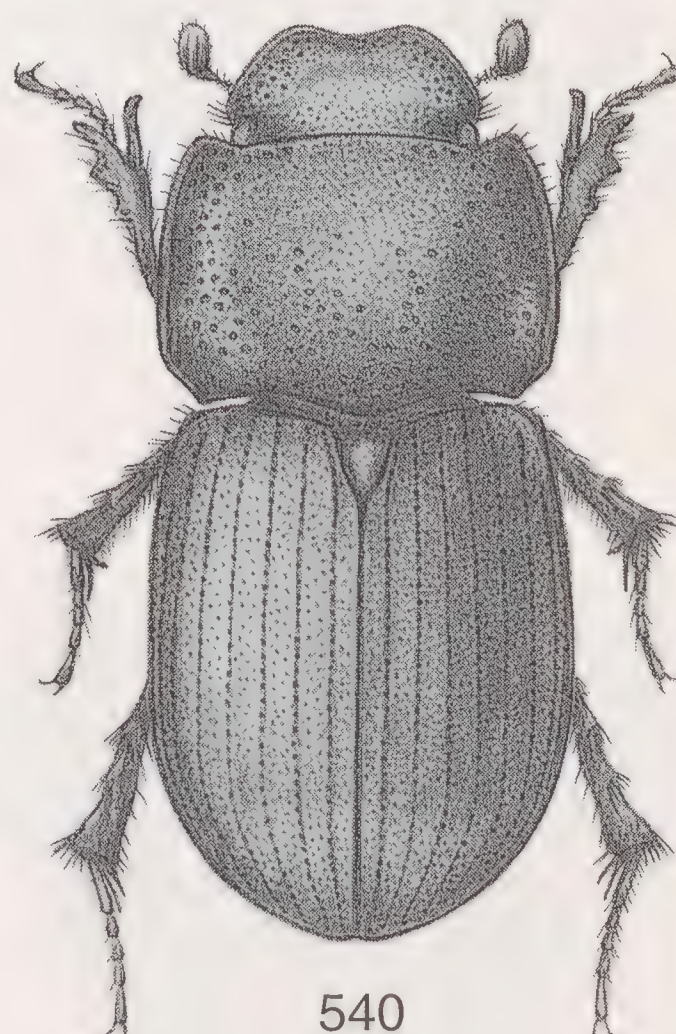
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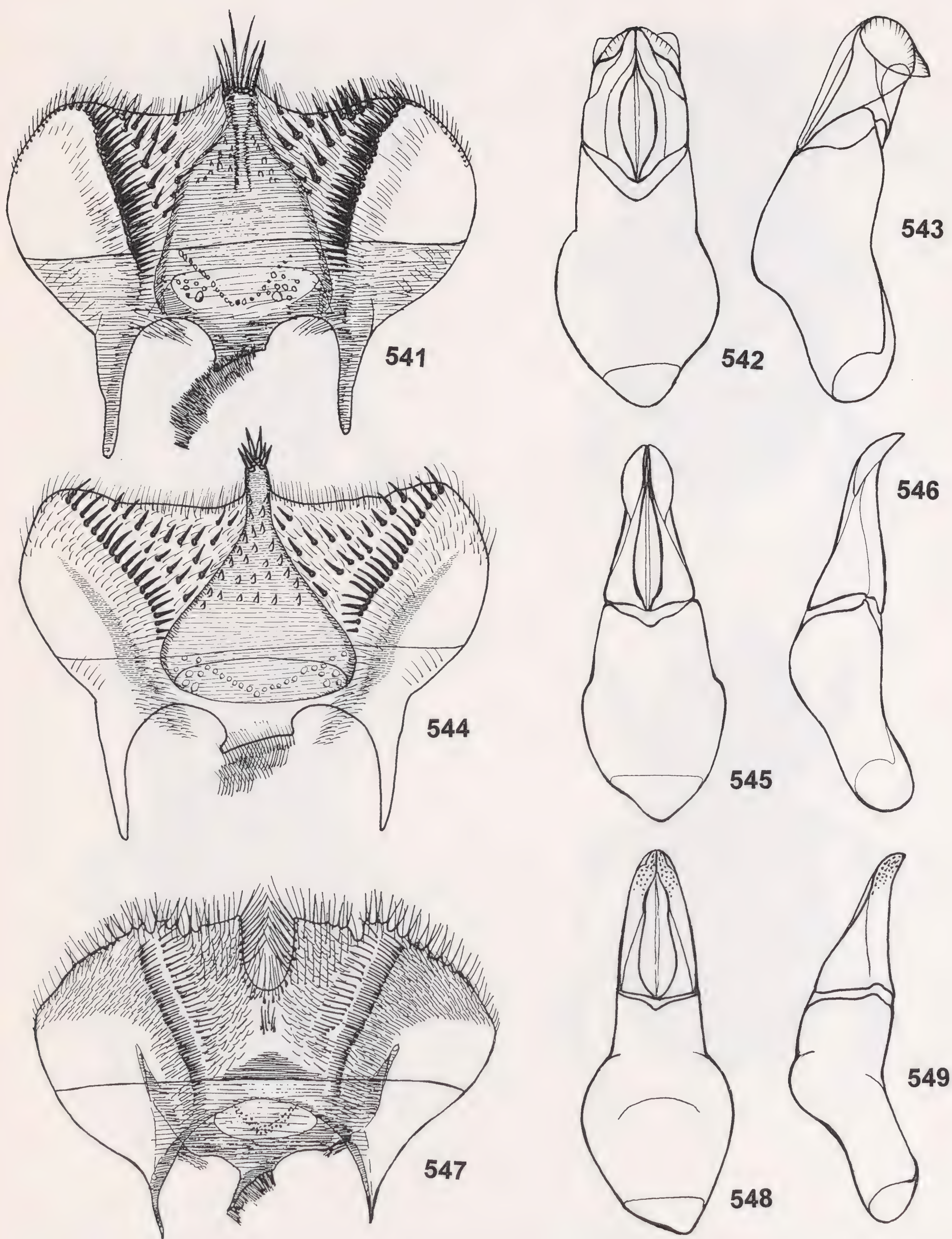
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Fig. 537. *Exaphodius excellens* Endrödi, 1960 (male, length 18 mm) (Central African Republic; Ndoki Nat. Park)

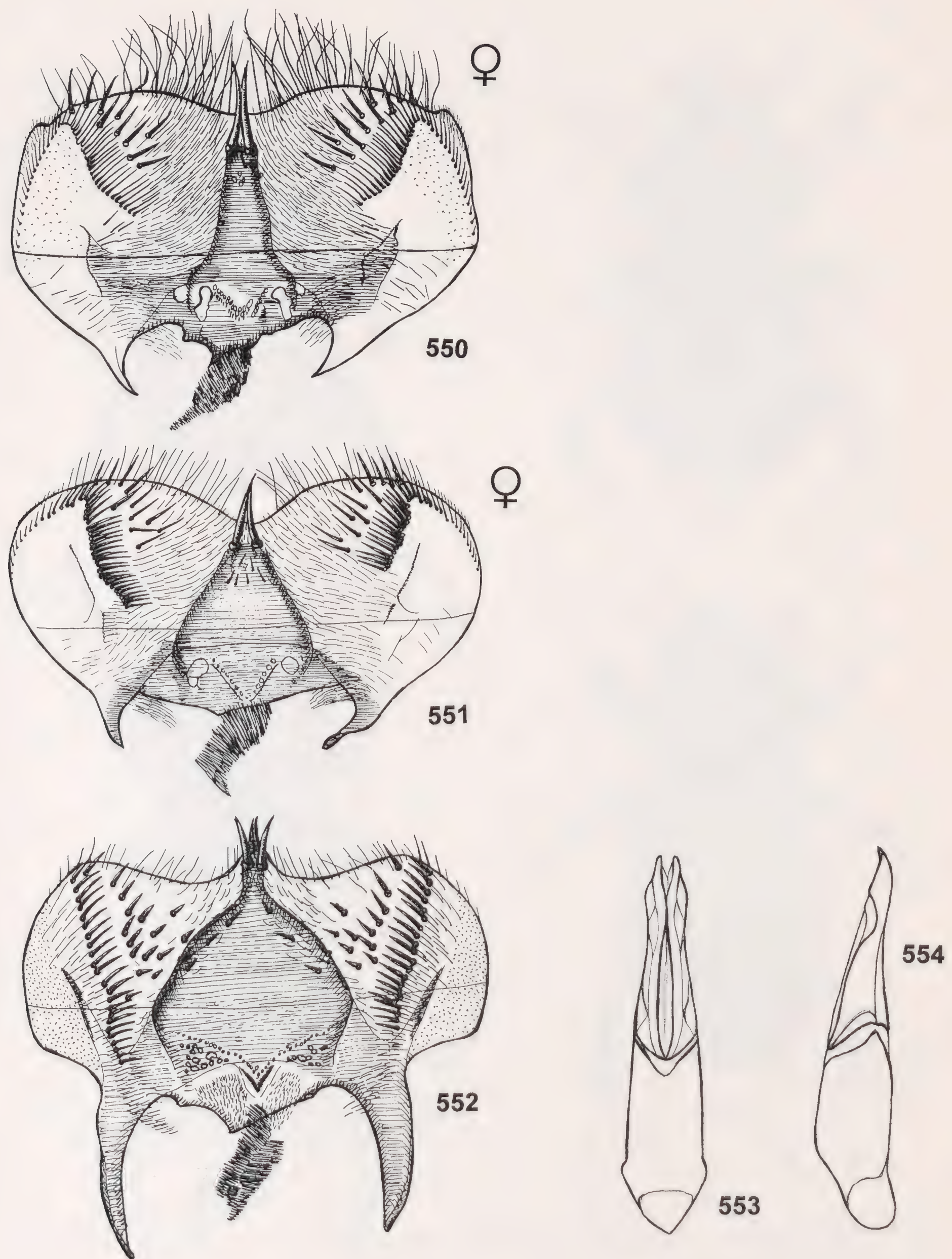
Fig. 538. *Gilletianus proclivis* (Balthasar, 1933) (female, length 4.5 mm) (China; Yunnan sen)

Fig. 539. *Gonaphodiellus pacatus* (Harold, 1880) (female, length 5.5 mm) (Columbia; Fusagasugà)

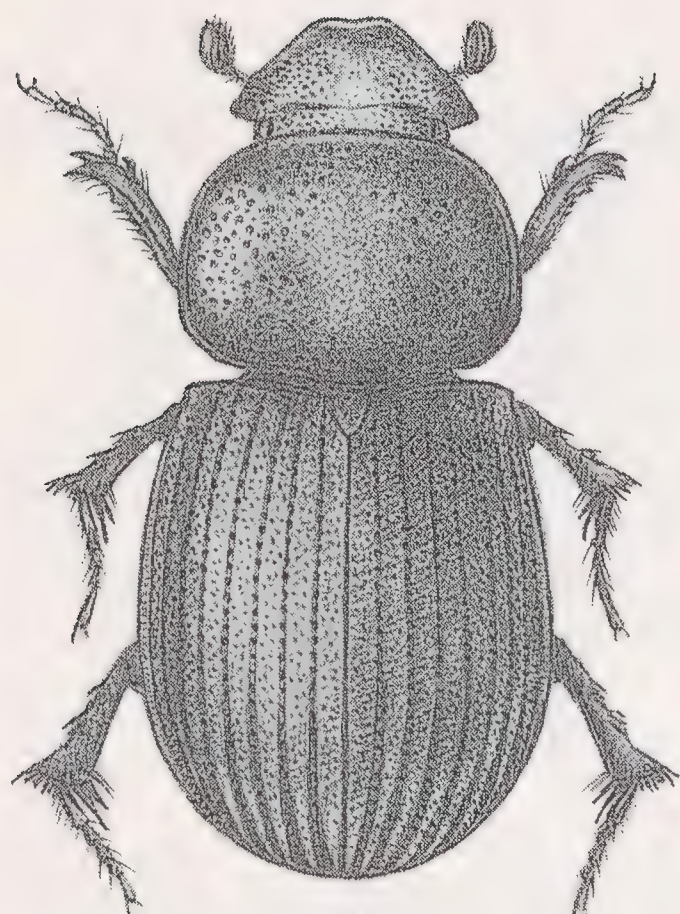
Fig. 540. *Gonaphodius scoparius* (Harold, 1877) (male, length 6 mm) (Mongolia; Suchbaatar, Dariging)



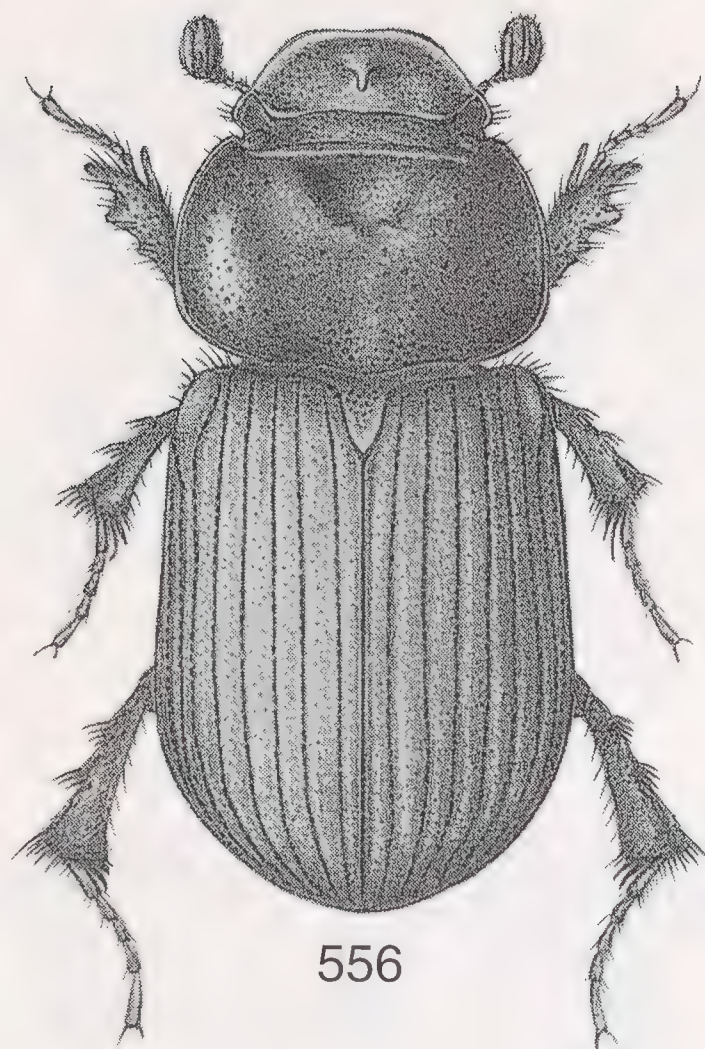
Figs 541-549. Epipharynx and aedeagus, dorsal and lateral view, of: 541-543 - *Euorodalus coenosus* (Panzer, 1798); 544-546 - *Eupleurus subterraneus* (Linné, 1758); 547-549 - *Exaphodius excellens* Endrödi, 1960



Figs 550-554. Epipharynx and aedeagus, dorsal and lateral view, of: 550 - *Gilletianus proclivis* (Balthasar, 1933); 551 - *Gonaphodiellus pacatus* (Harold, 1880); 552-554 - *Gonaphodius scoparius* (Harold, 1877)



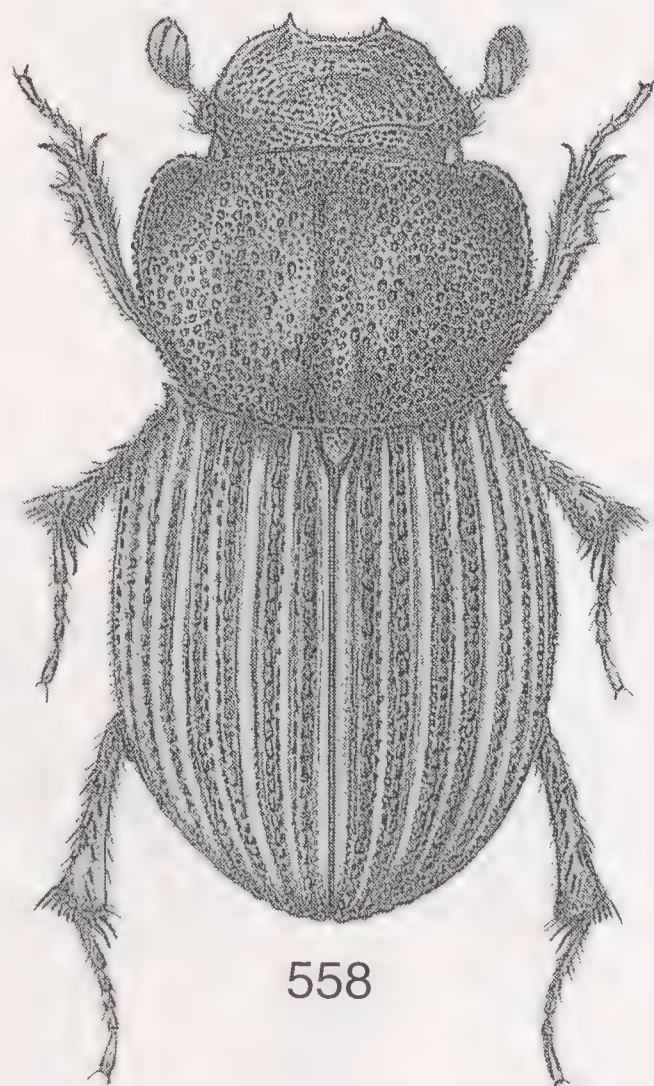
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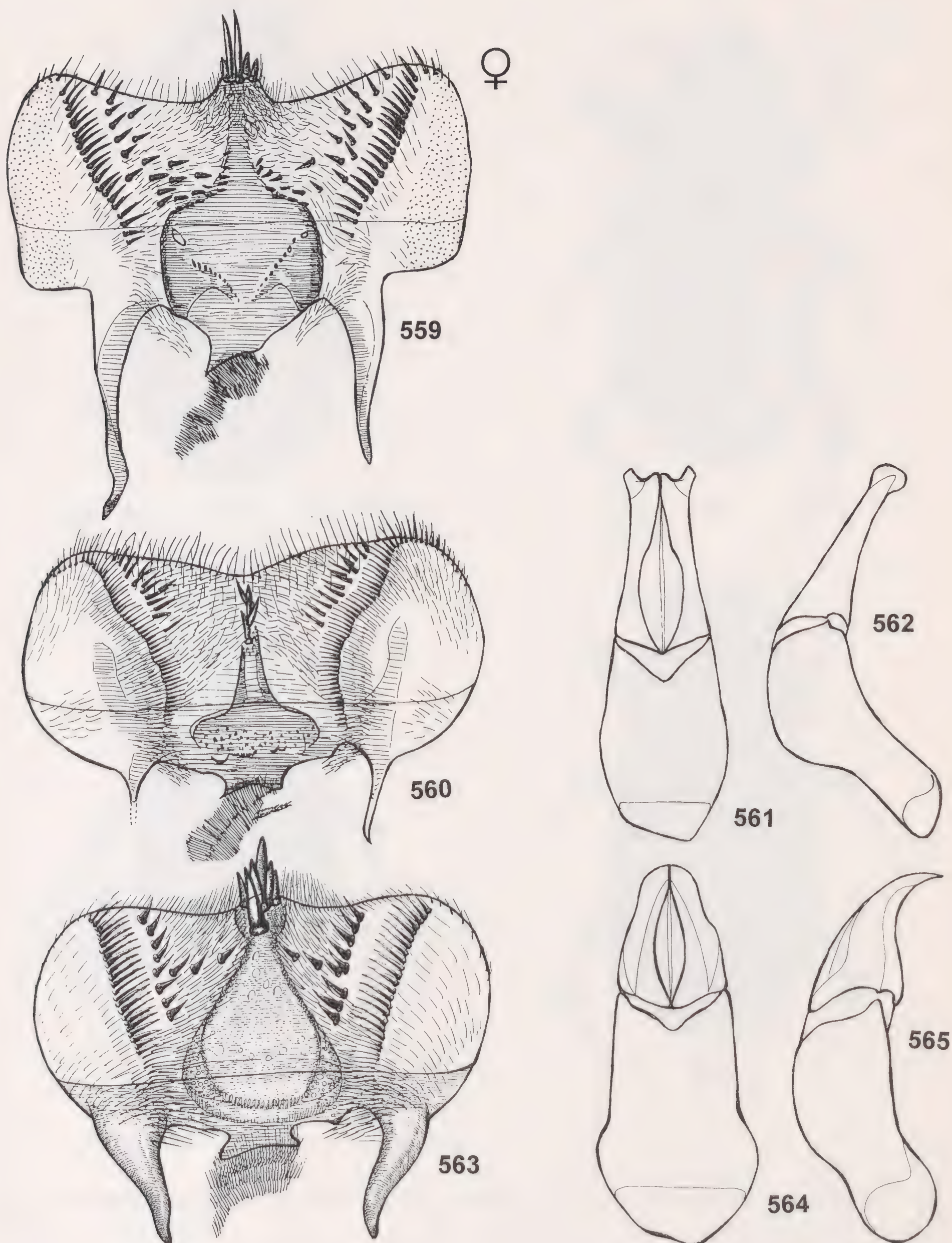
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Fig. 555. *Harmodactylus oscitans* Péringuey, 1901 (female, length 5.5 mm) (South Africa; Cape Colony [Cape Town])

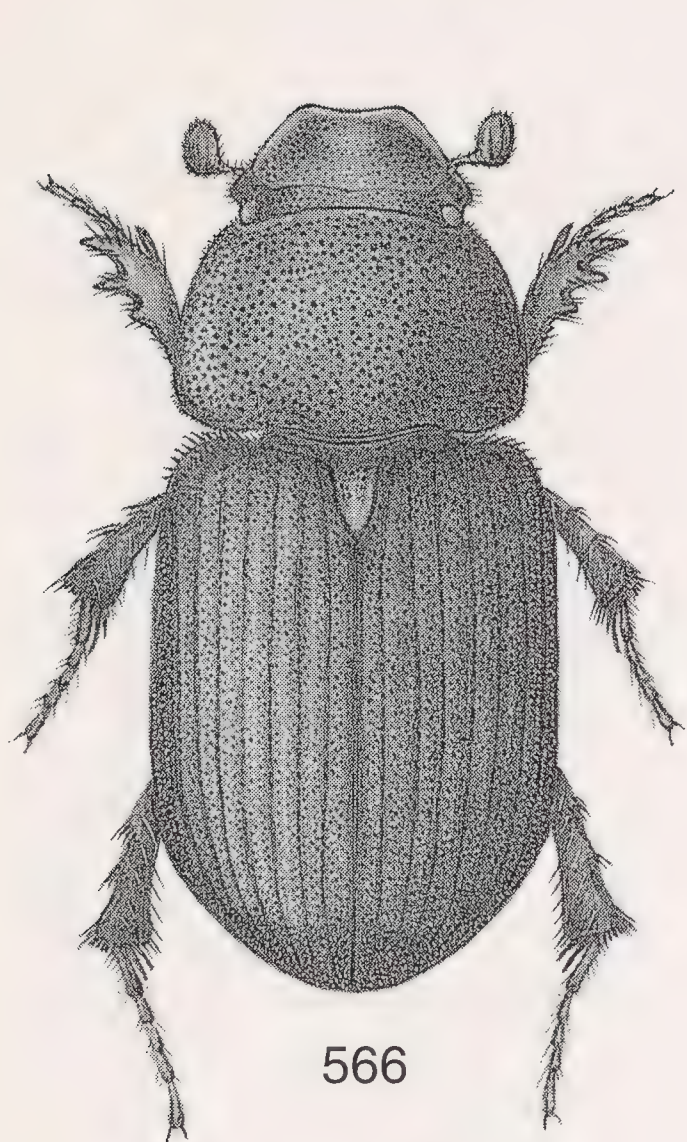
Fig. 556. *Hemicyclium unicornutum* (A. Schmidt, 1909) (male, length 8 mm) (South Africa; Johannesburg env.)

Fig. 557. *Heptaulacus testudinarius* (Fabricius, 1775) (male, length 4 mm) (Spain; Madrid env.)

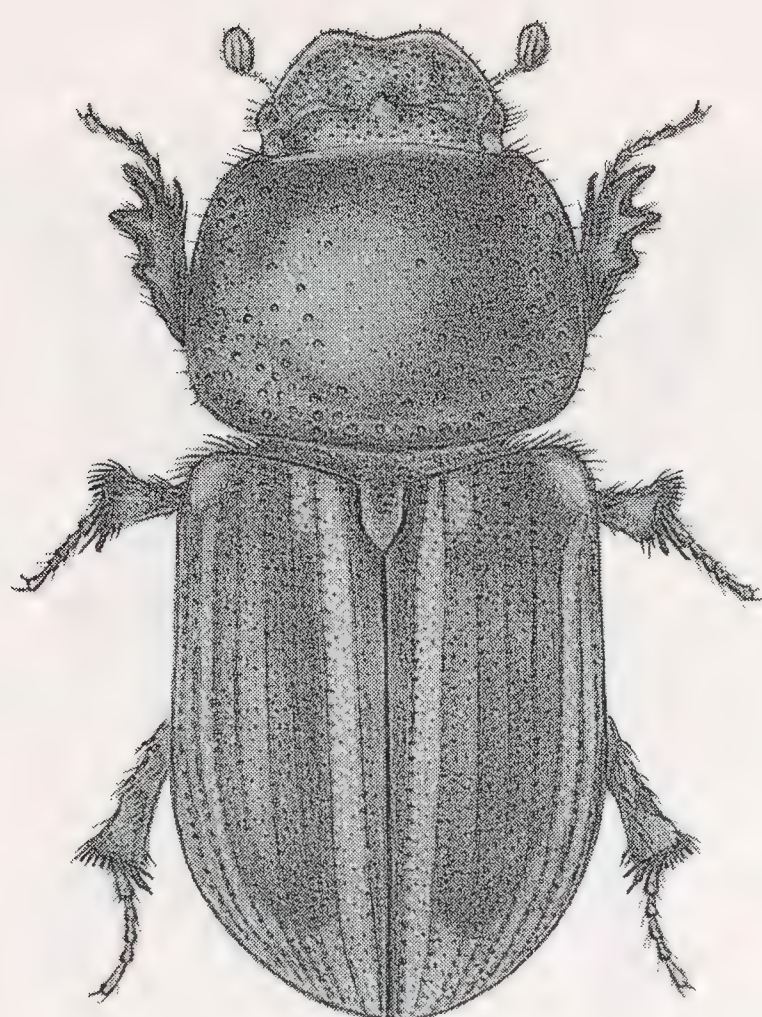
Fig. 558. *Koreoxyomus koreanus* Kim, 1996 (male, length 5 mm) (South Korea; Hongchou GW., Kiebangsan Mt.)



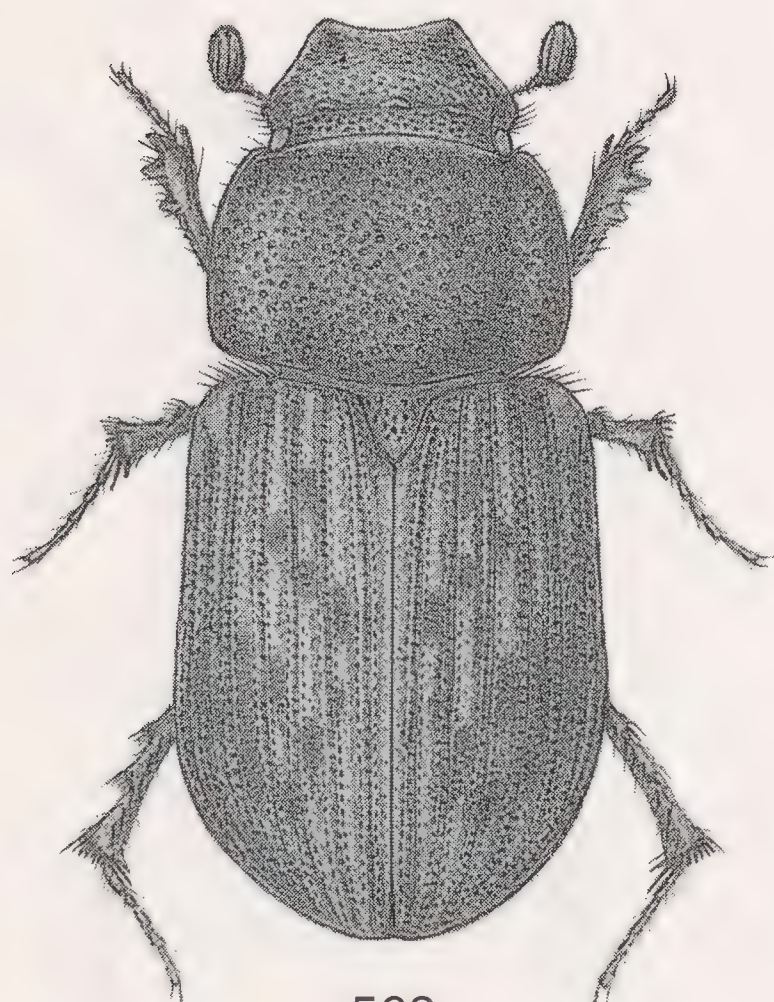
Figs 559-565. Epipharynx and aedeagus, dorsal and lateral view, of: 559 - *Harmodatylus oscitans* Péringuey, 1901; 560-562 - *Hemicyclium unicornutum* (A. Schmidt, 1909); 563-565 - *Heptaulacus testudinarius* (Fabricius, 1775)



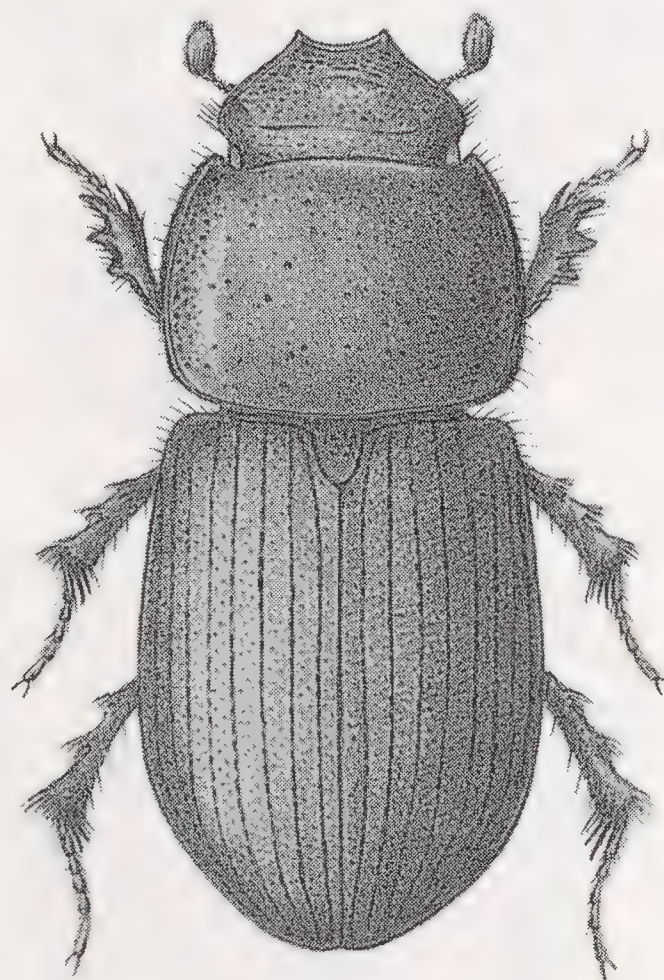
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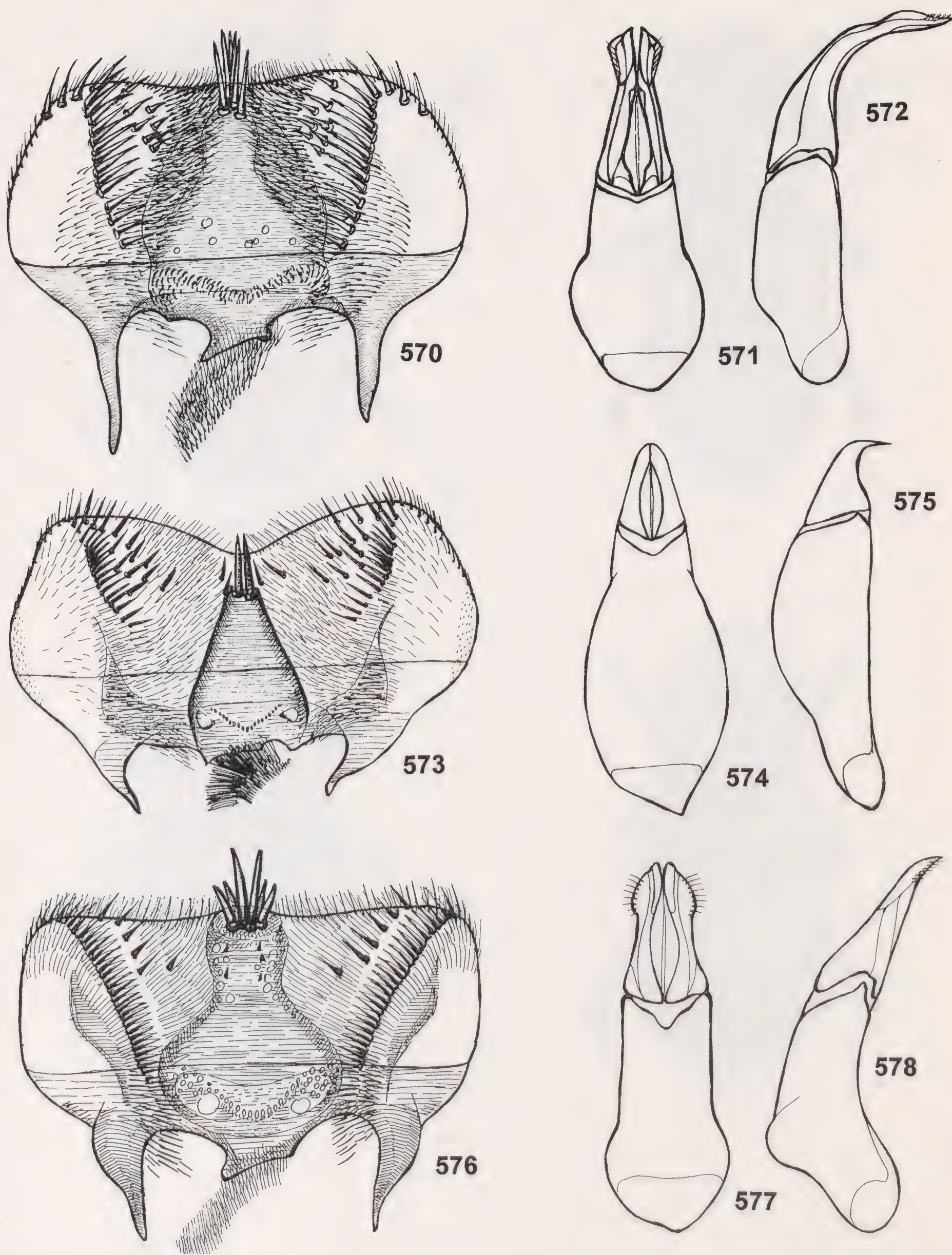
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Fig. 566. *Koshantschikovius substriatus* (A. Schmidt, 1911) (male, length 5 mm) (Ethiopia; Shoa Prov., Langano Lake)

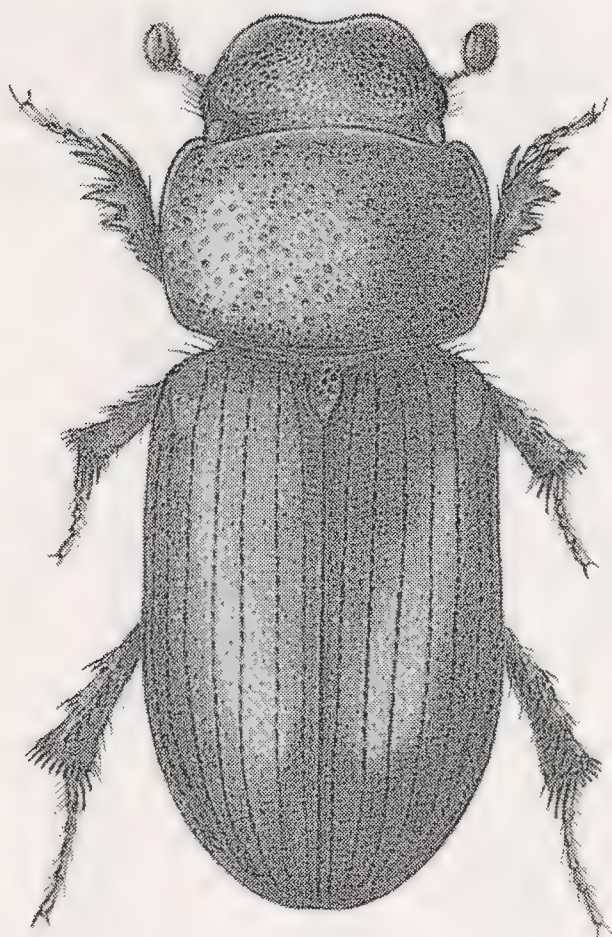
Fig. 567. *Labarrus lividus* (Olivier, 1789) (male, length 4 mm) (Italy; Calabria, Catanzaro, Santa Maria di Ricadi)

Fig. 568. *Limarus zenkeri* (Germar, 1813) (male, length 5 mm) (Italy; Calabria, Aspromonte, Cippo Garibaldi)

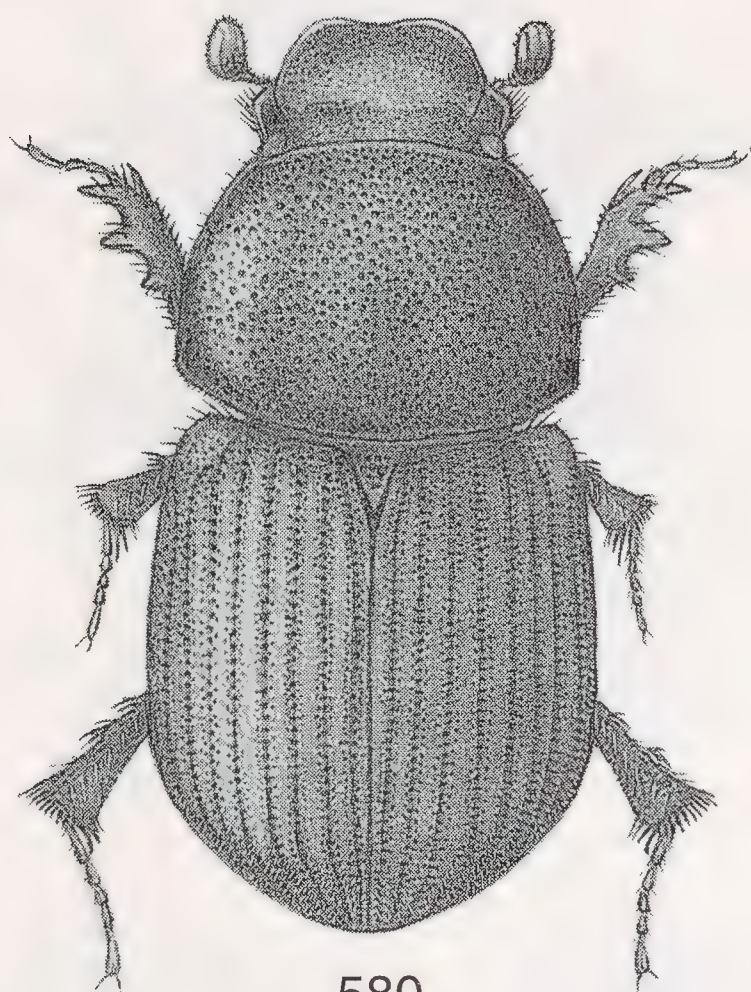
Fig. 569. *Lindbergianus solitarius* (Petrovitz, 1961) (male, length 4 mm) (Afghanistan; Bamyjan prov., Band i Amir)



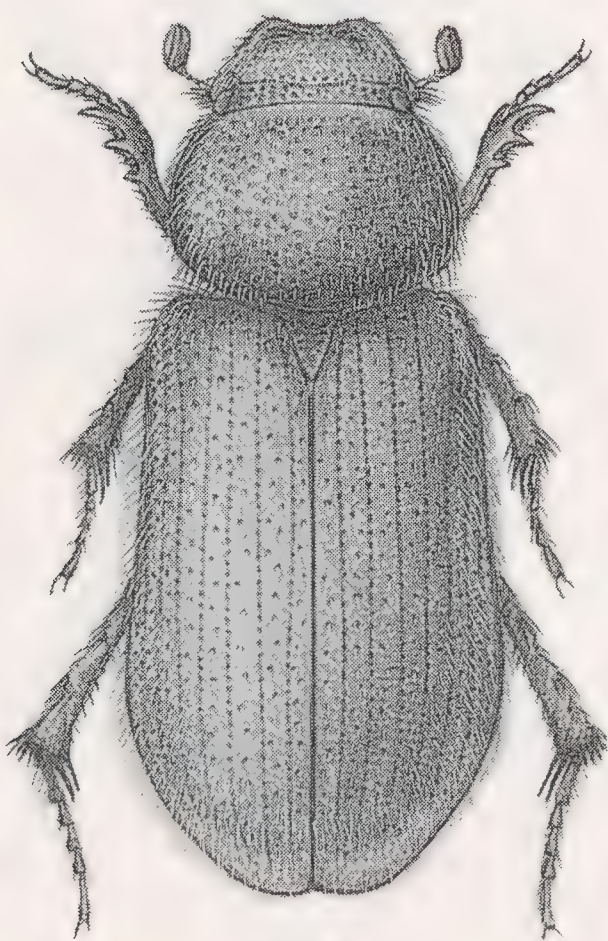
Figs 570-578. Epipharynx and aedeagus, dorsal and lateral view, of: 570-572 - *Koreoxyomus koreanus* Kim, 1996; 573-575 - *Koshantschikovius substriatus* (A. Schmidt, 1911); 576-578 - *Labarrus lividus* (Olivier, 1789)



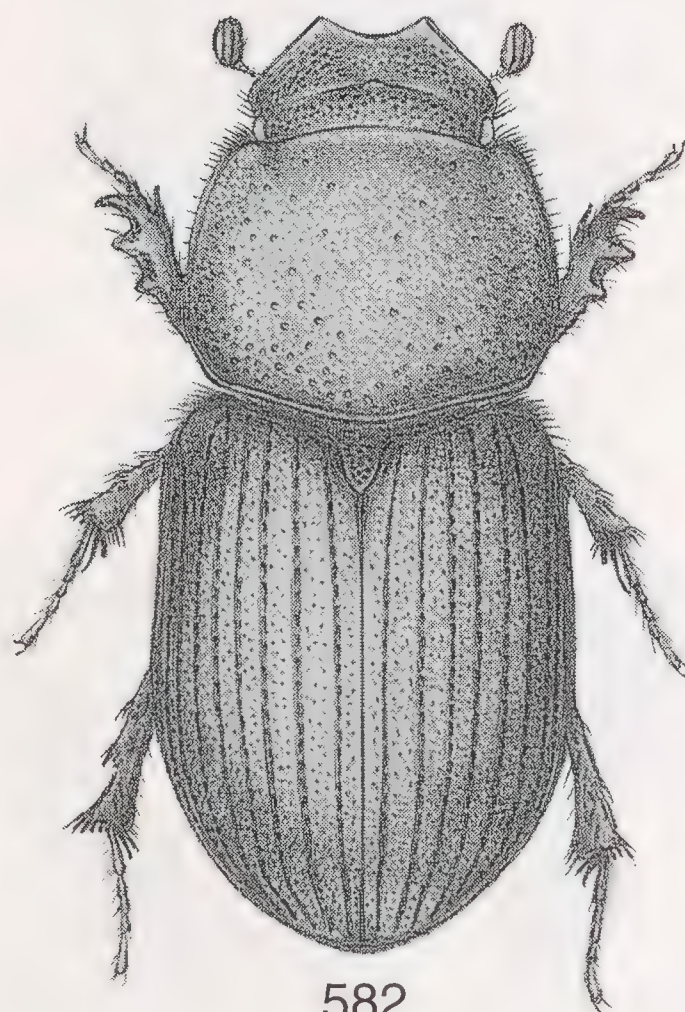
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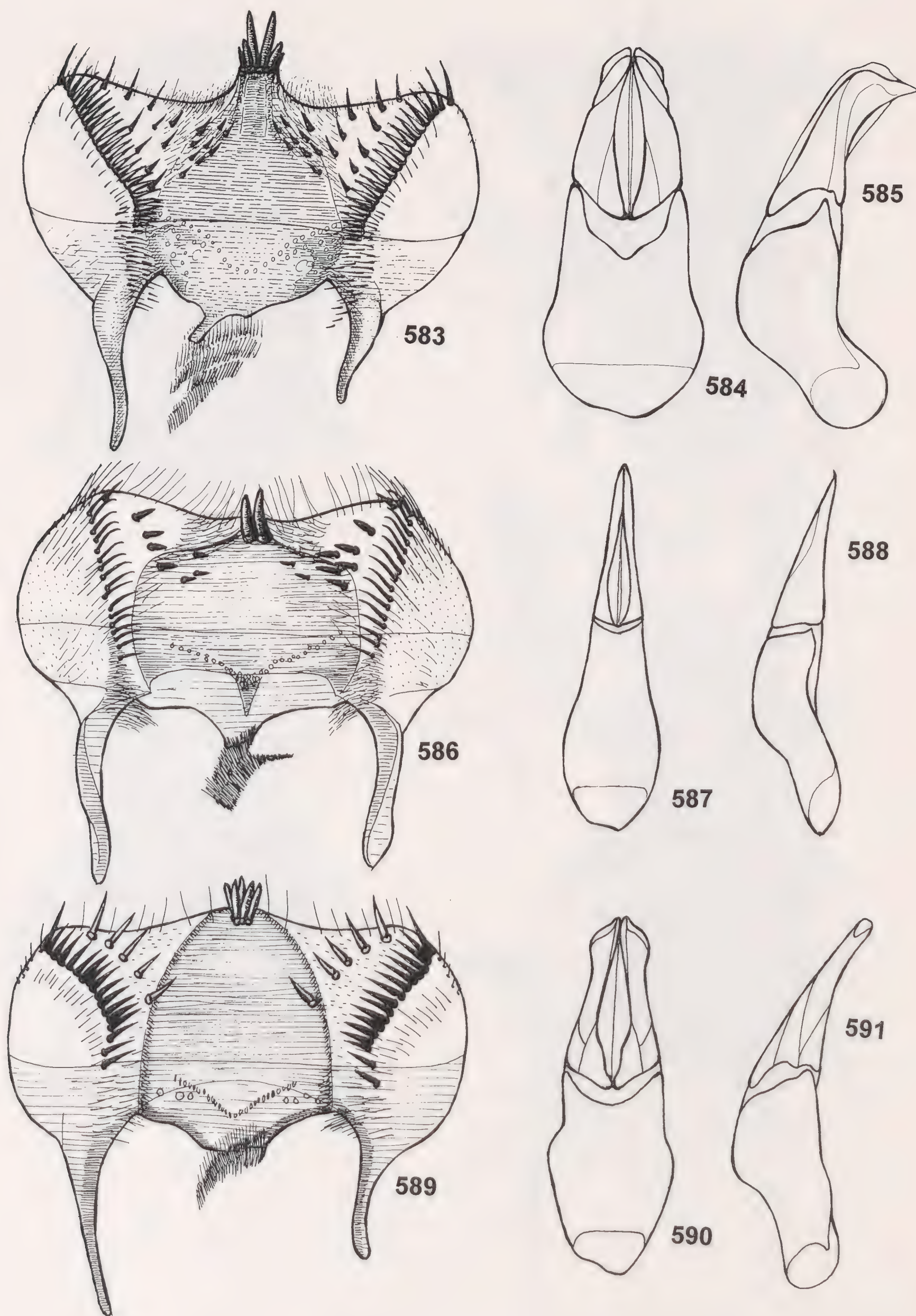
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Fig. 579. *Liothorax plagiatus* (Linné, 1767) (male, length 4 mm) (Austria; Burgenland, Apetlon)

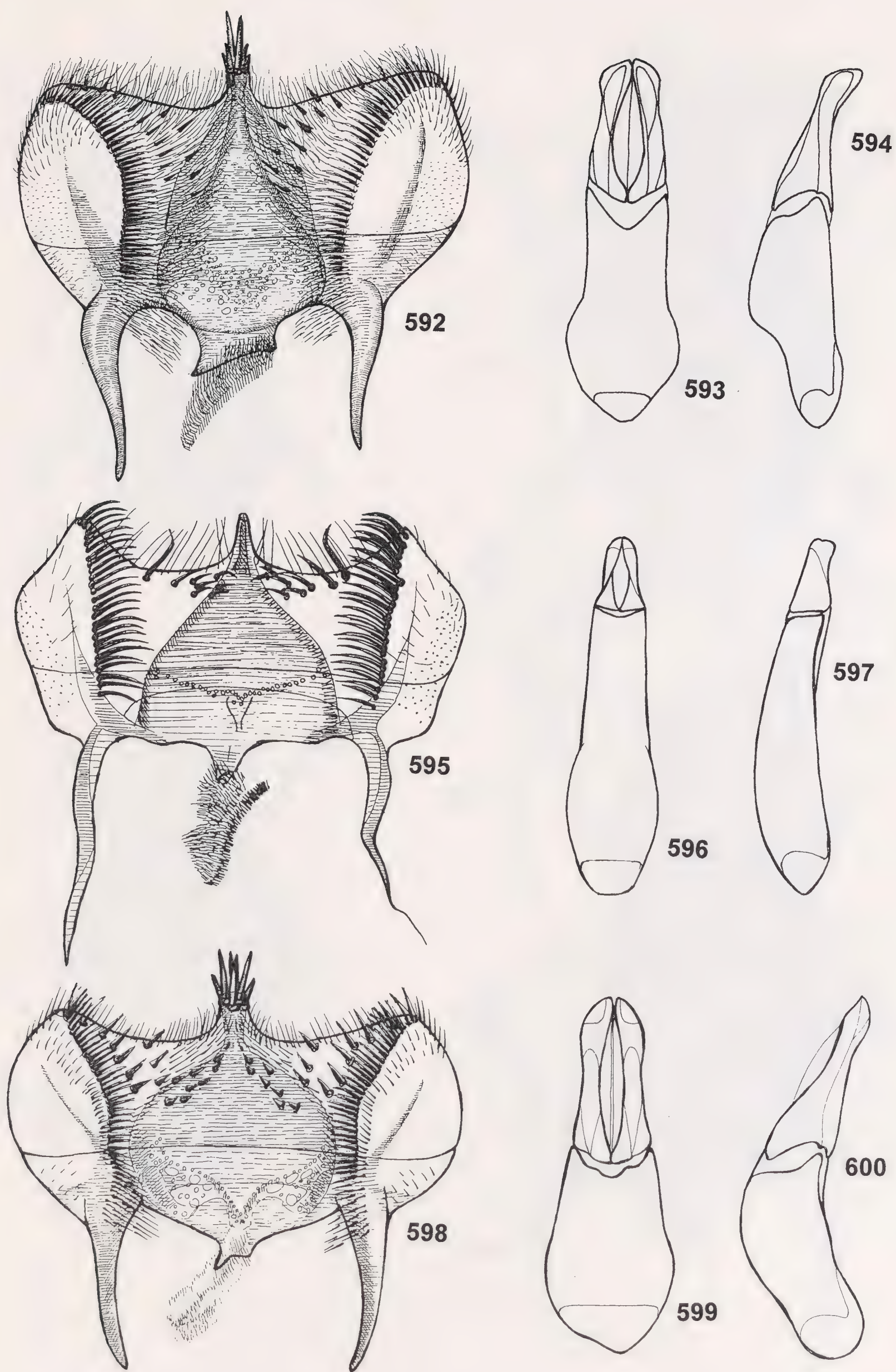
Fig. 580. *Loboparius globulus* (Harold, 1859) (male, length 4.5 mm) (China; Sichuan, Liziping)

Fig. 581. *Longaphodius namaquarum* (Endrödi, 1980) (male, length 5 mm) (South Africa; Namaqualand Coast, Gemsbok vlatke farm)

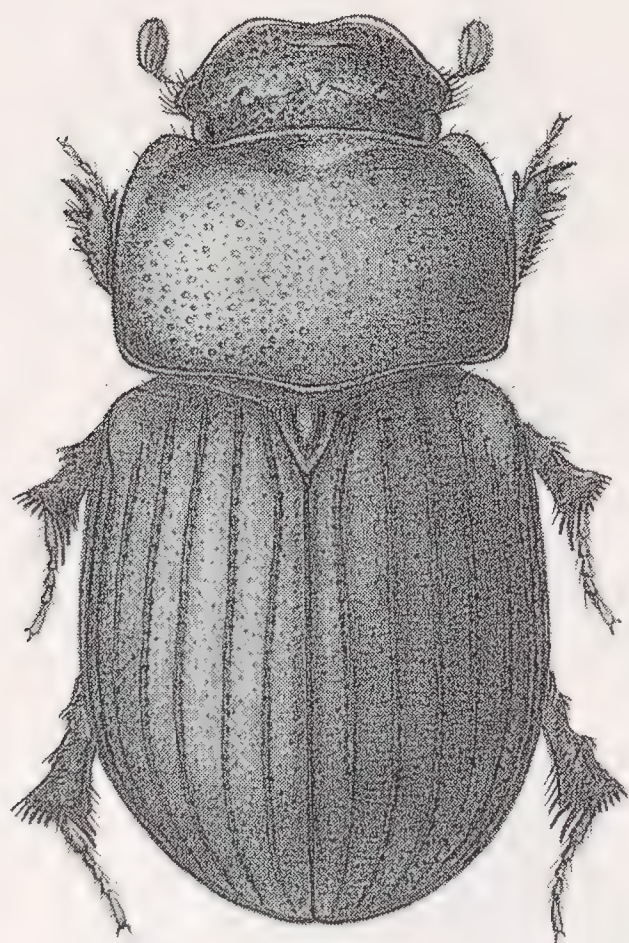
Fig. 582. *Loraphodius suarius* (Faldermann, 1835) (male, length 6 mm) (Italy; Puglia, Taranto, Manduria)



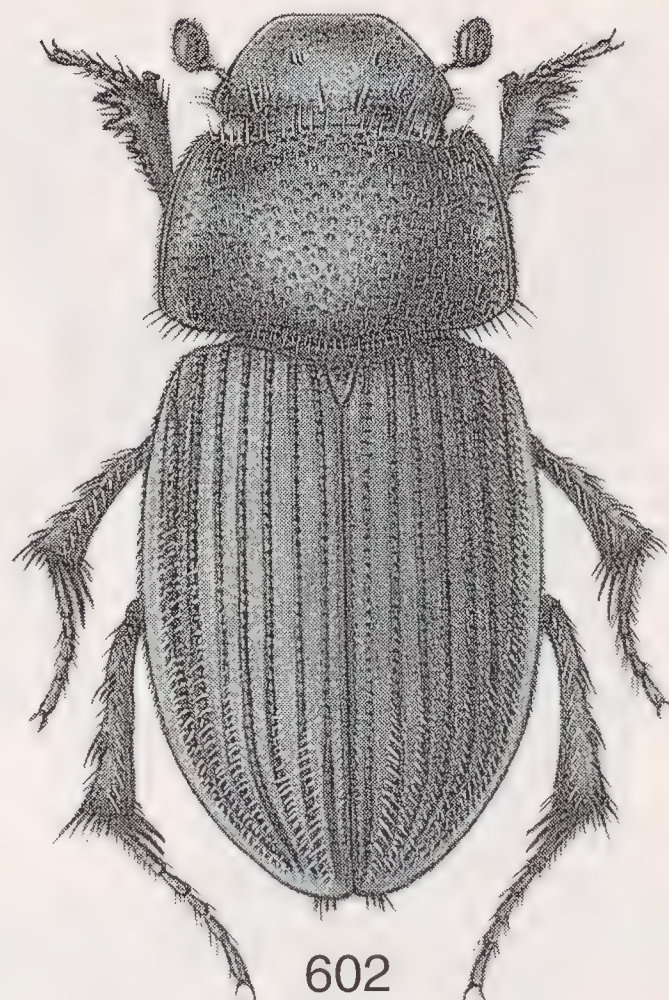
Figs 583-591. Epipharynx and aedeagus, dorsal and lateral view, of: 583-585 - *Limarus zenkeri* (Germar, 1813); 586-588 - *Lindbergianus solitarius* (Petrovitz, 1961); 589-591 - *Liothorax plagiatus* (Linné, 1767)



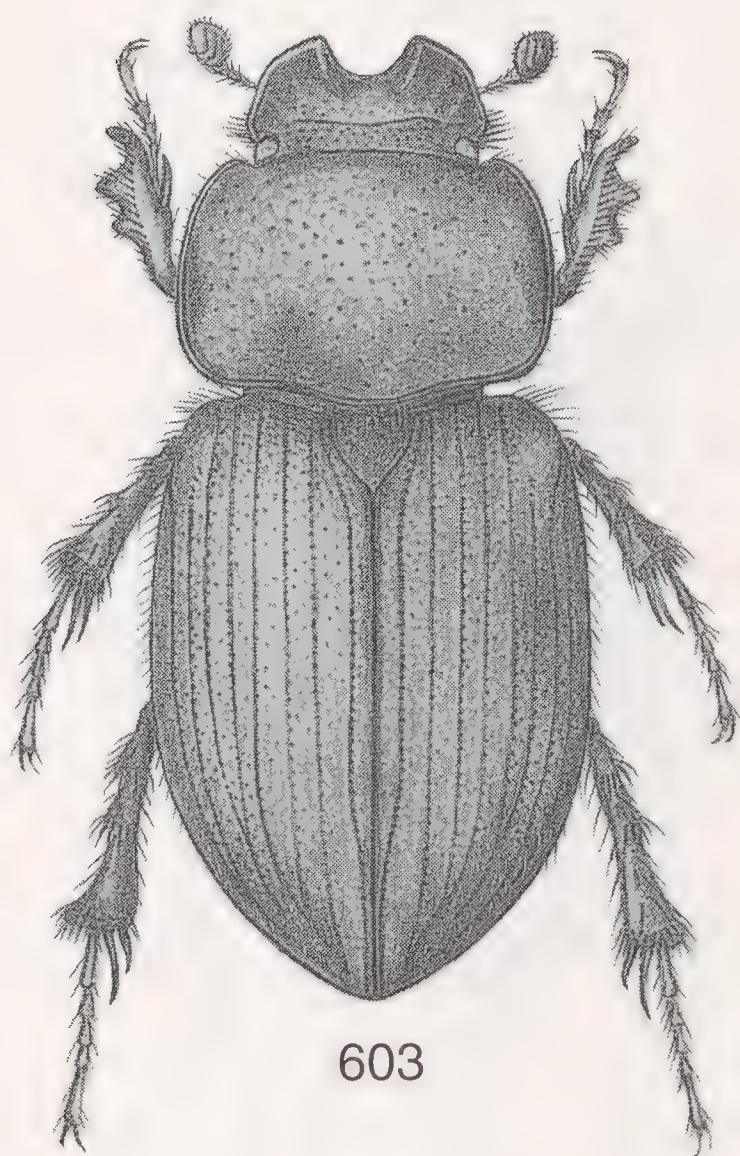
Figs 592-600. Epipharynx and aedeagus, dorsal and lateral view, of: 592-594 - *Loboparius globulus* (Harold, 1859); 595-597 - *Longaphodius namaquarum* (Endrödi, 1980); 598-600 - *Loraphodius suarius* (Faldermann, 1835)



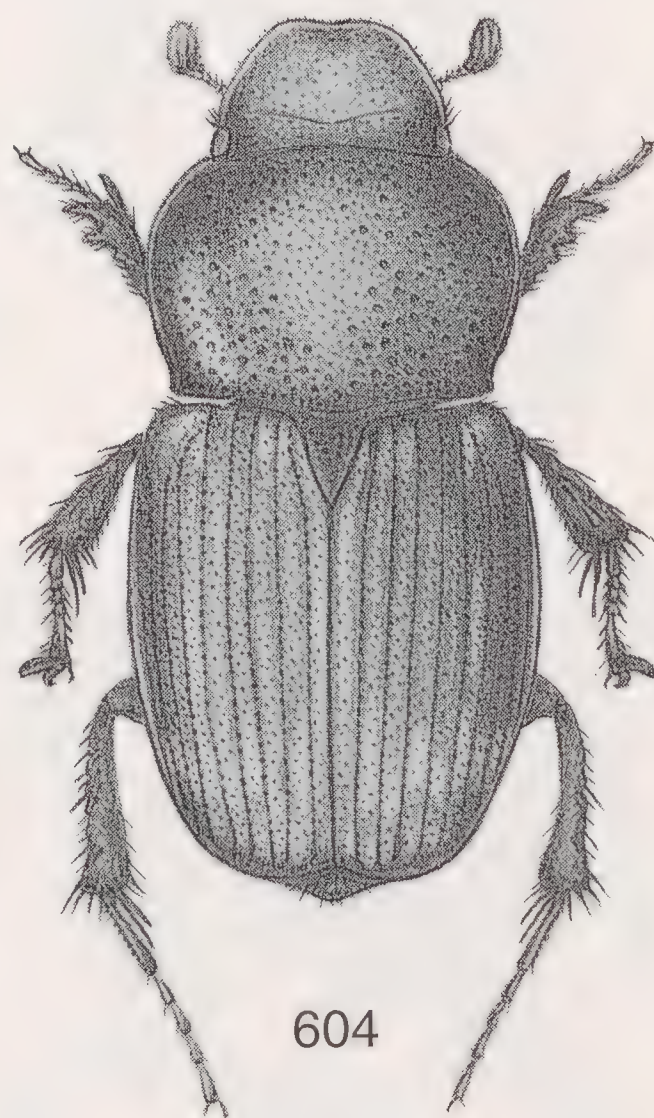
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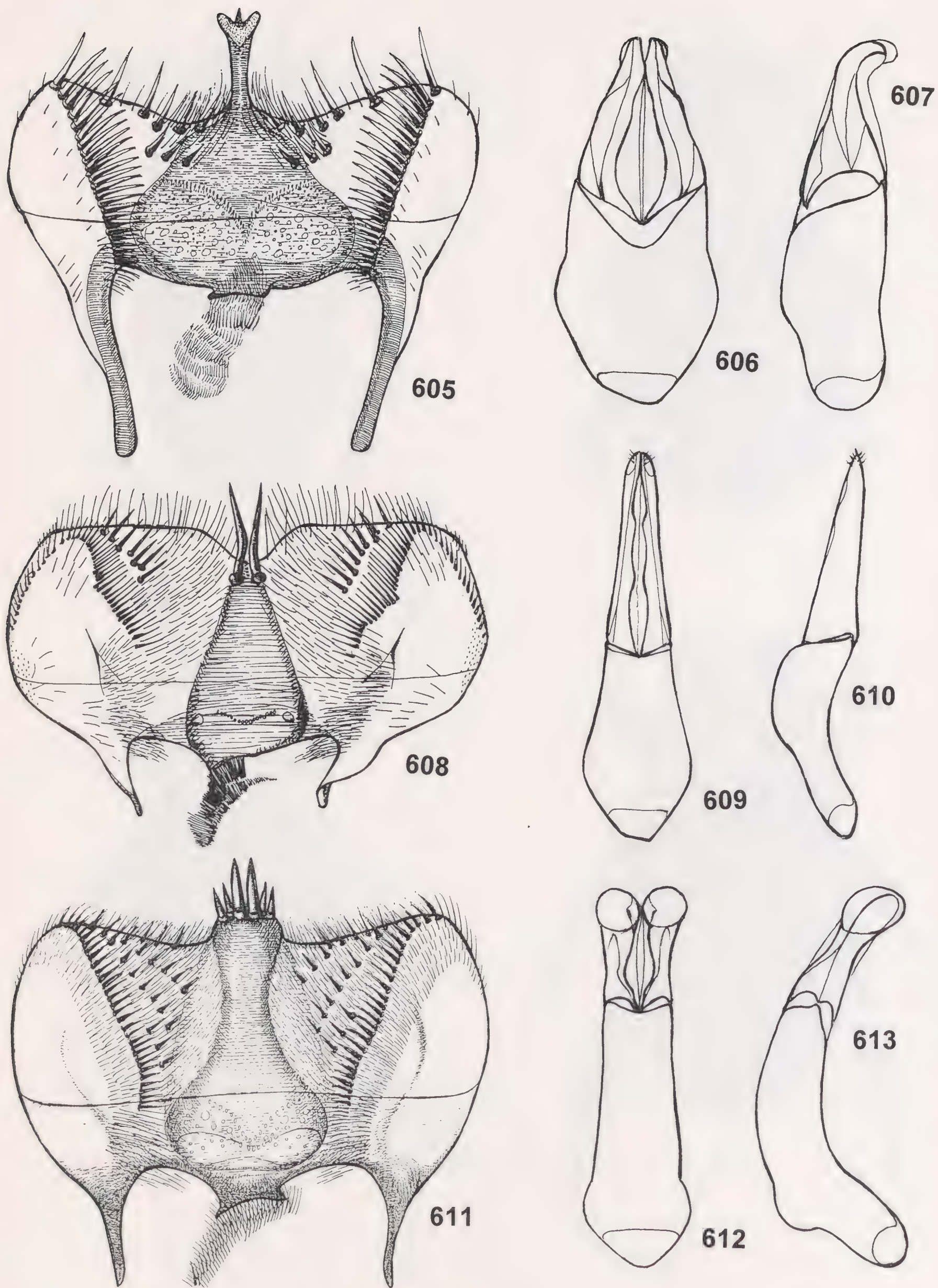
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Fig. 601. *Loraspis frater* (Mulsant & Rey, 1870) (male, length 6 mm) (Turkestan; Verny)

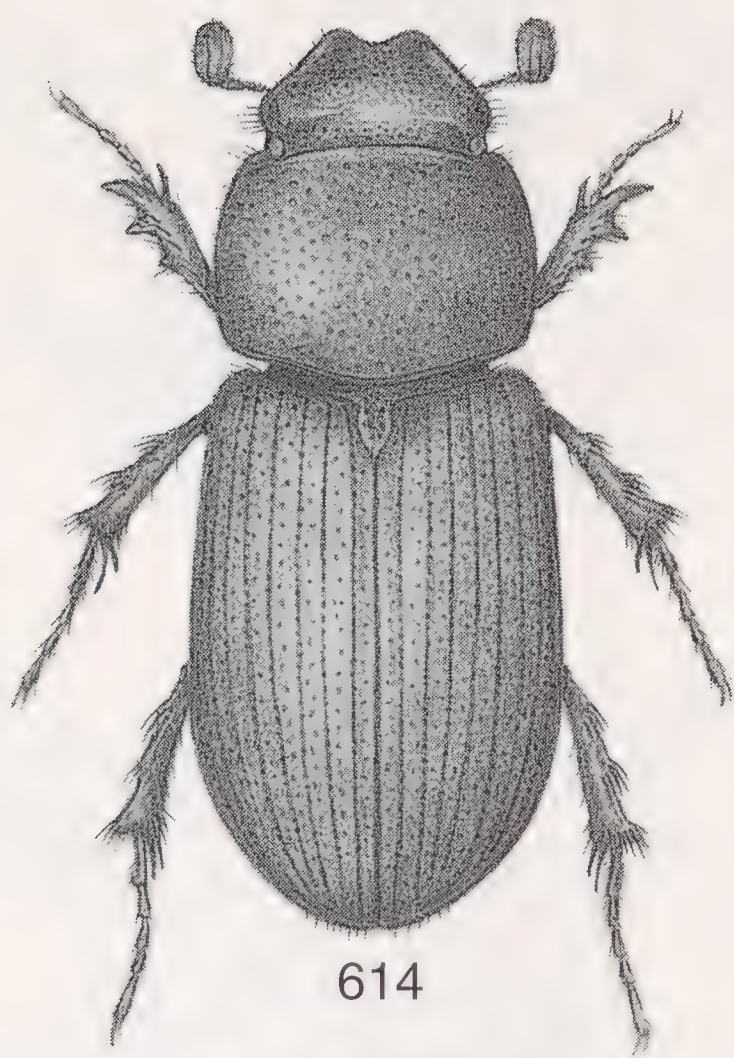
Fig. 602. *Lorditomaheus opatroides* (Klug, 1855) (male, length 6 mm) (Cameroon; Meroua)

Fig. 603. *Lunaphodius lunifer* (Solsky, 1876) (male, length 8 mm) (Tadzikistan; Khadzhi-Mastok)

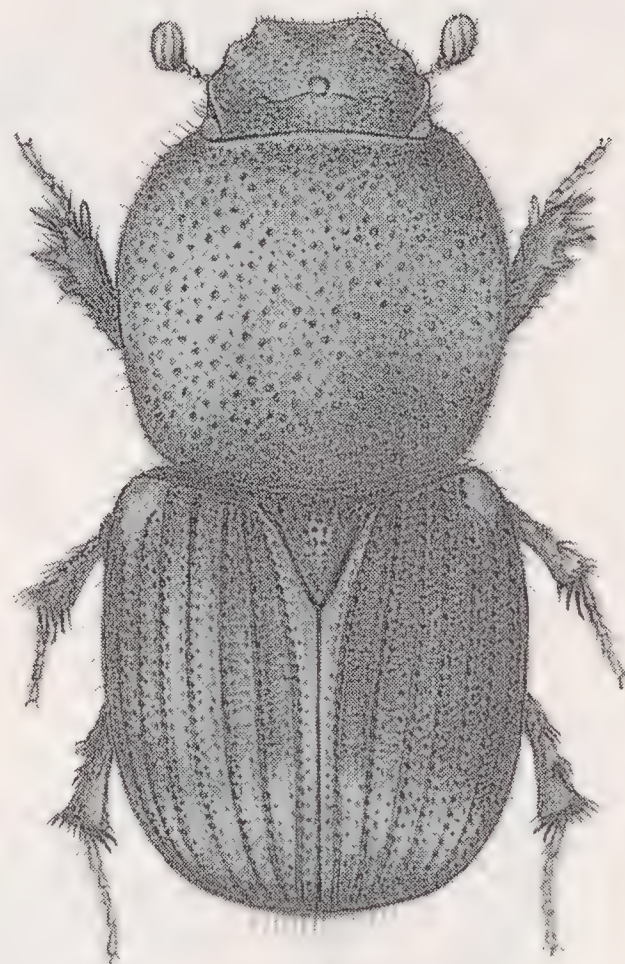
Fig. 604. *Macroretrus singularis* Péringuey, 1908 (male, length 4 mm) (Malawi; Michiru Mt. Park)



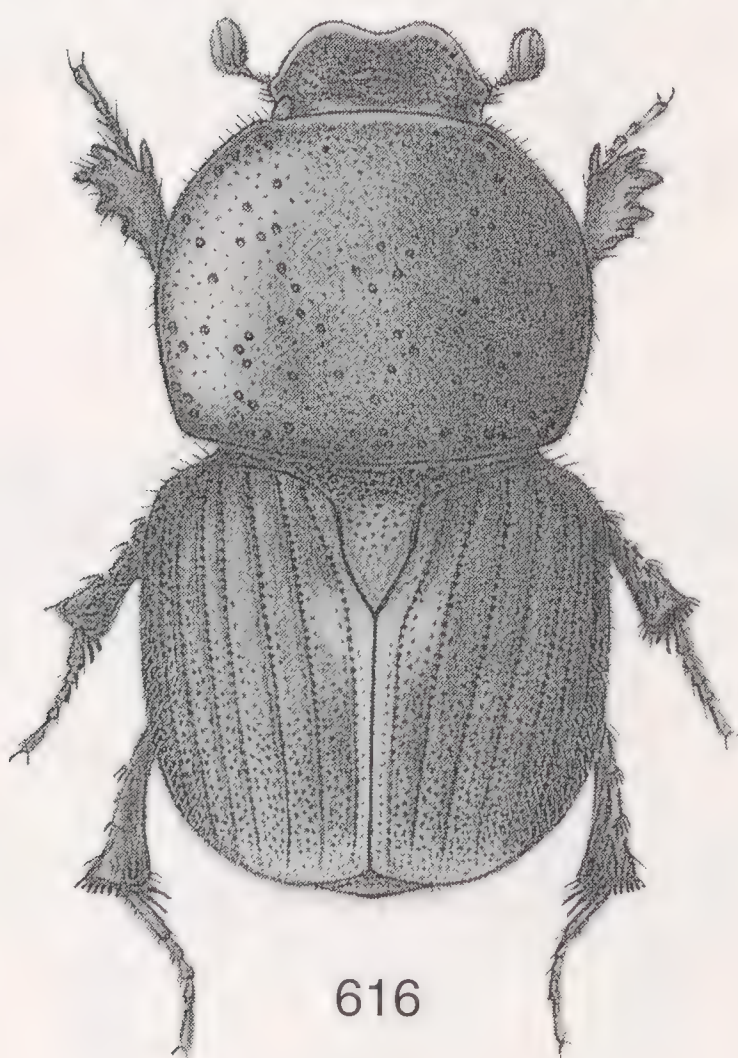
Figs 605-613. Epipharynx and aedeagus, dorsal and lateral view, of: 605-607 - *Loraspis frater* (Mulsant & Rey, 1870); 608-610 - *Lorditomaeus opatroides* (Klug, 1855); 611-613 - *Lunaphodius lunifer* (Solsky, 1876)



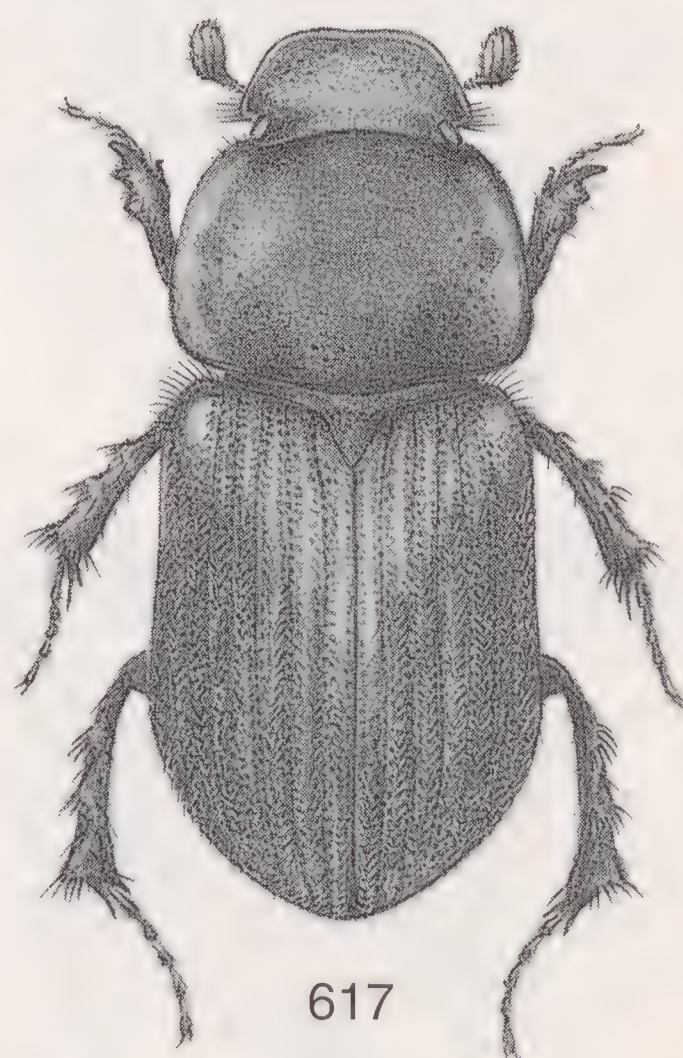
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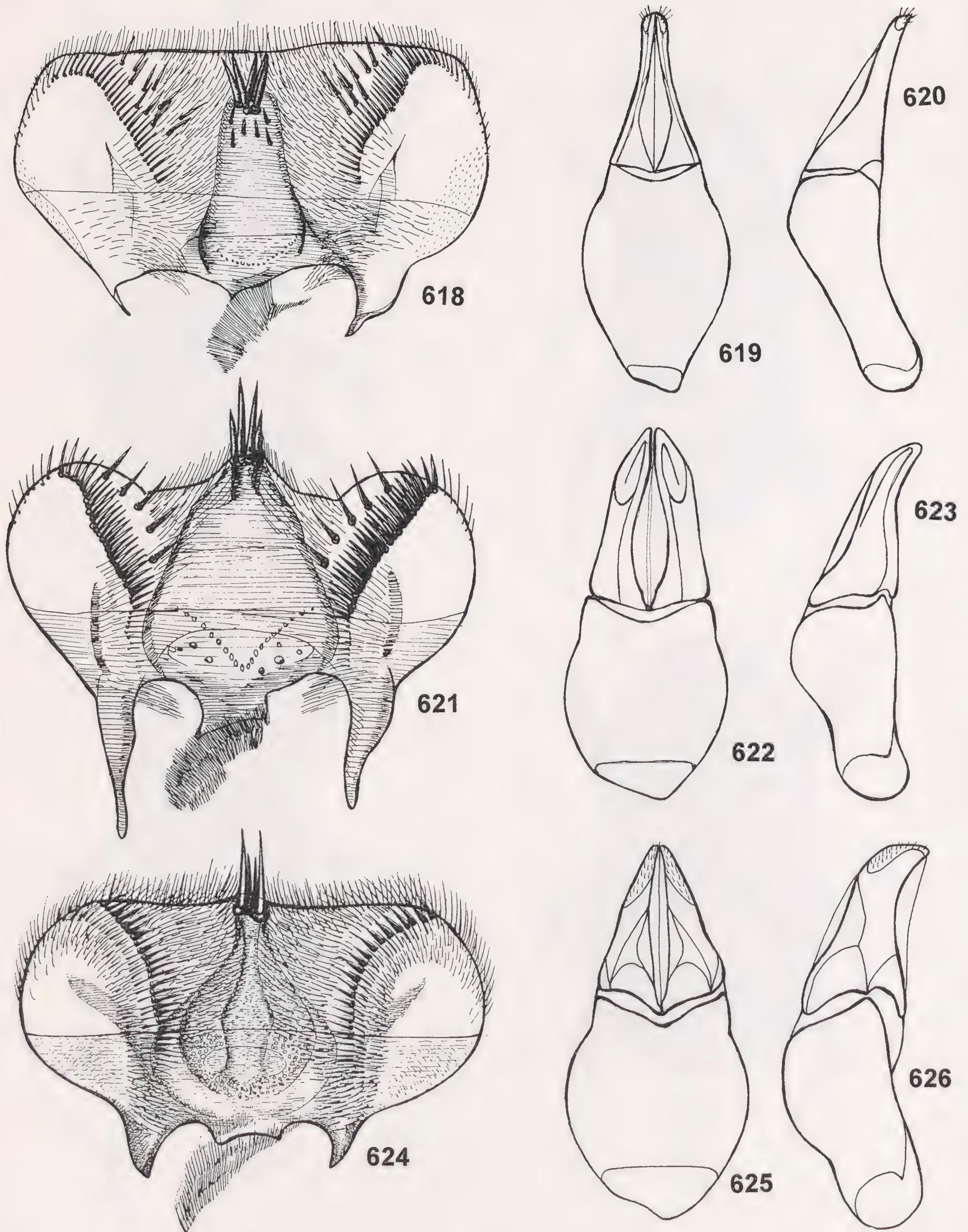
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Fig. 614. *Mecynodes striatulus* (Waltl, 1835) (male, length 3 mm) (Italy; Calabria, Reggio di Calabria, Foce del Fiume Petrace)

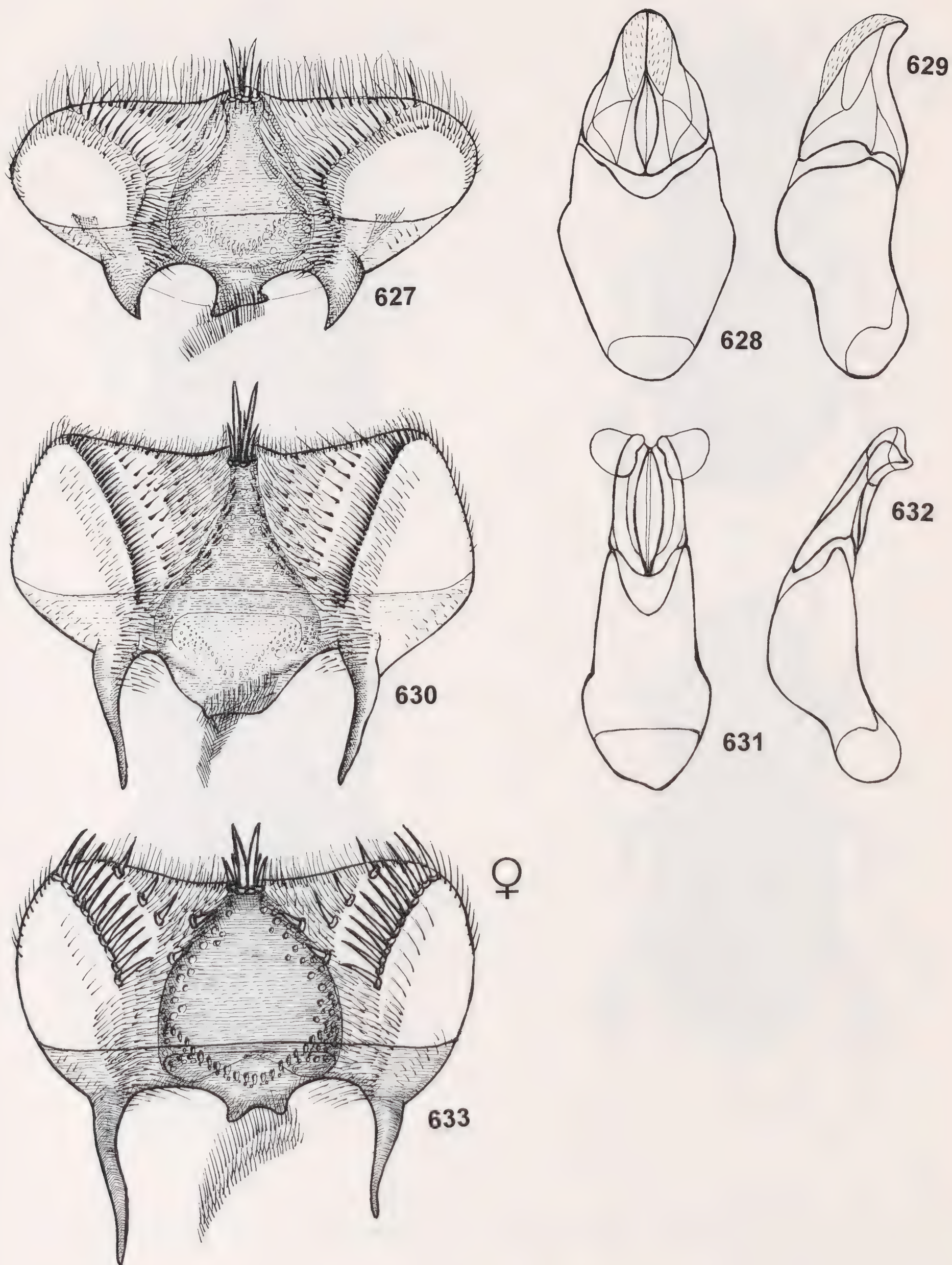
Fig. 615. *Megateloides dimidiatus* (Roth, 1851) (male, length 4 mm) (Ethiopia, Sotit, el Eghin)

Fig. 616. *Megatelus brahminus* (Harold, 1879) (male, length 5 mm) (Cambodia; Picnil)

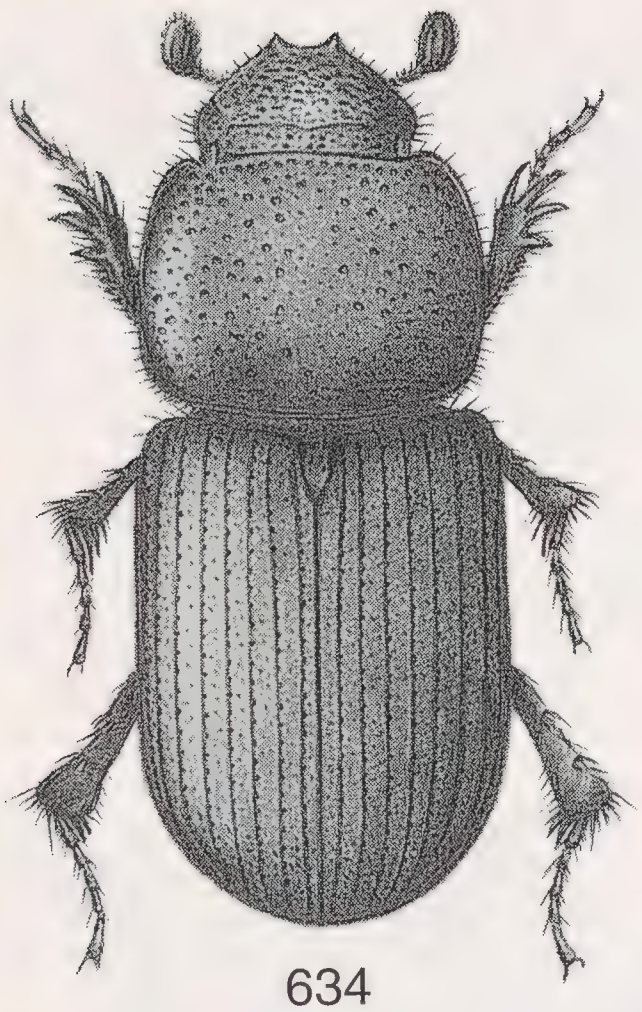
Fig. 617. *Melinopterus prodromus* (Brahm, 1790) (male, length 7 mm) (Italy; Piemonte, Cuneo)



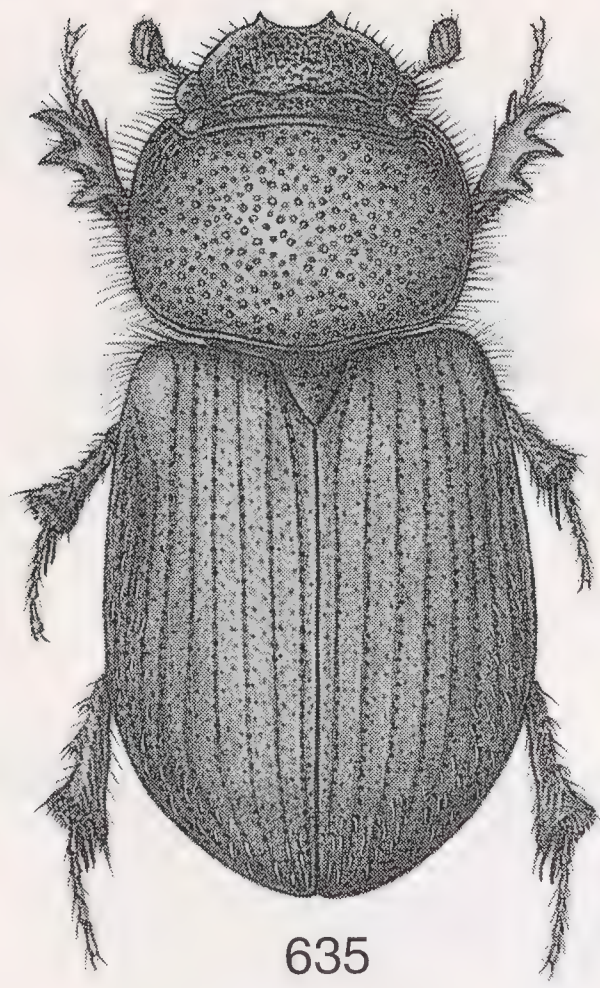
Figs 618-626. Epipharynx and aedeagus, dorsal and lateral view, of: 618-620 - *Macroretrus singularis* Péringuey, 1908; 621-623 - *Mecynodes striatulus* (Waltl, 1835); 624-626 - *Megateloides dimidiatus* (Roth, 1851)



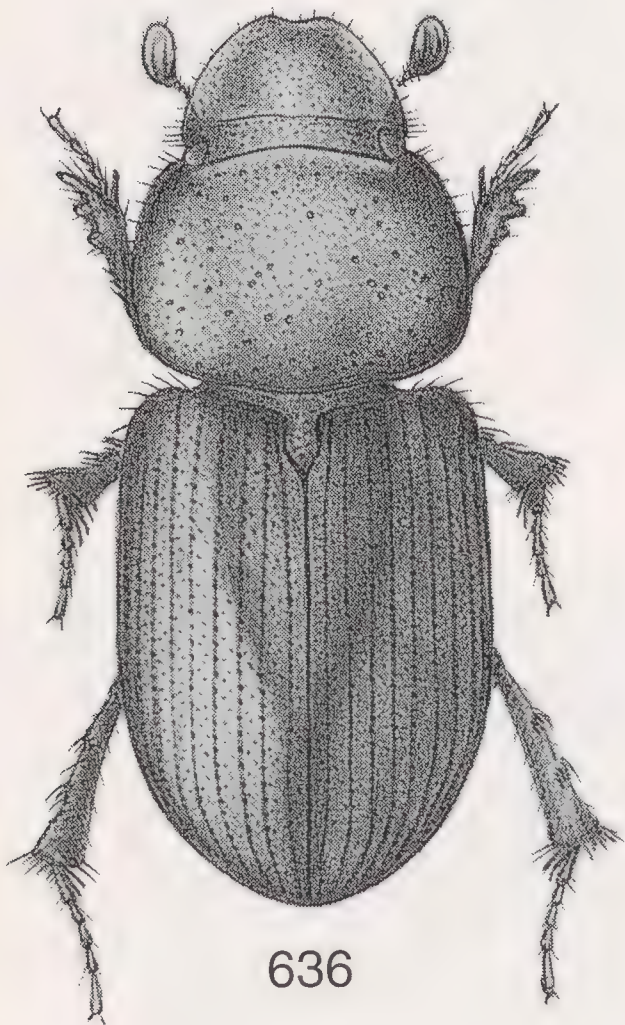
Figs 627-633. Epipharynx and aedeagus, dorsal and lateral view, of: 627-629 - *Megatelus brahminus* (Harold, 1879); 630-632 - *Melinopterus prodromus* (Brahm, 1790); 633 - *Mendidaphodius spinifrontis* (Reitter, 1901)



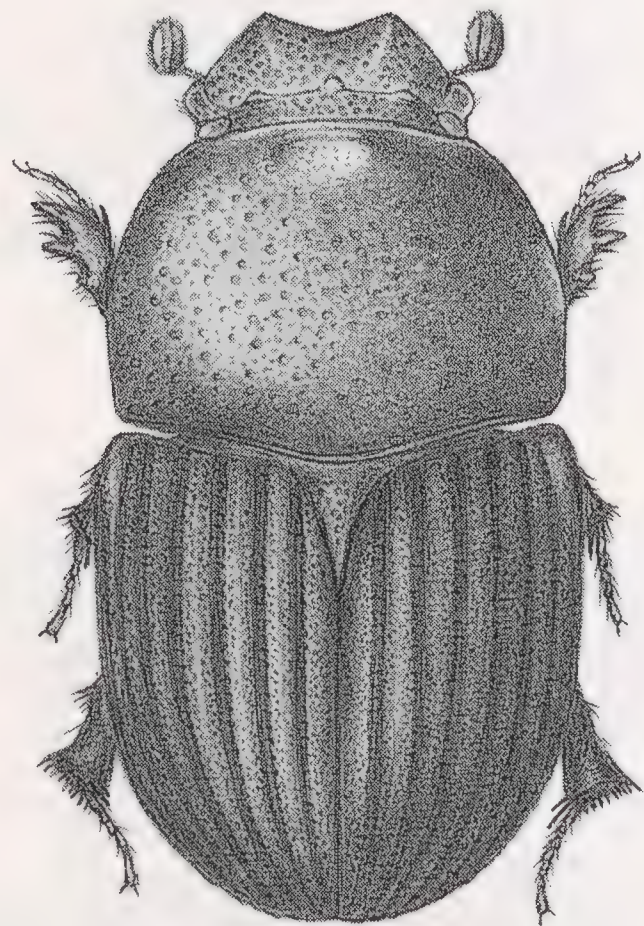
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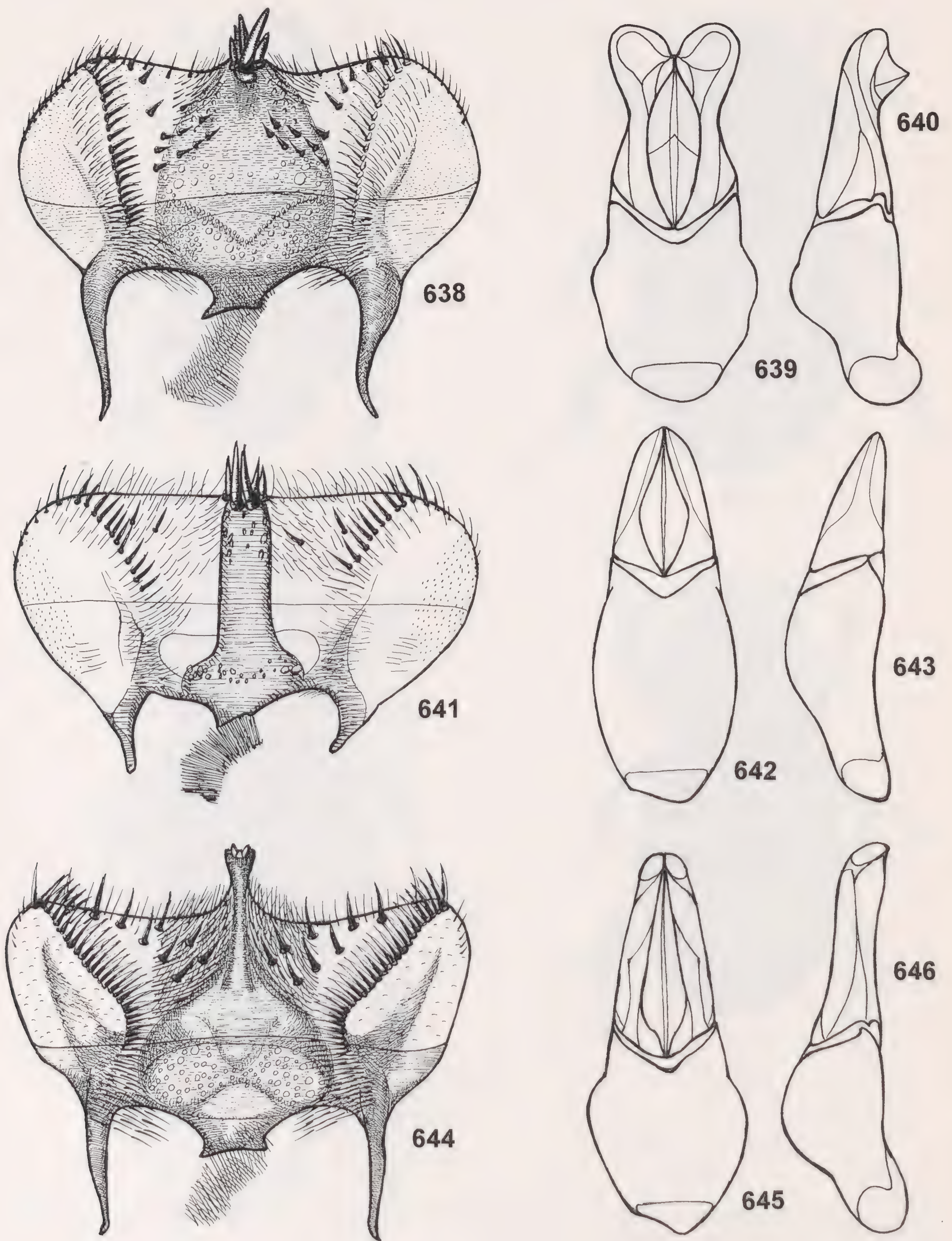
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Fig. 634. *Mendidaphodius spinifrontis* (Reitter, 1901) (female, length 4.5 mm) (Indersk [Kazakhstan; Ozero Inder])

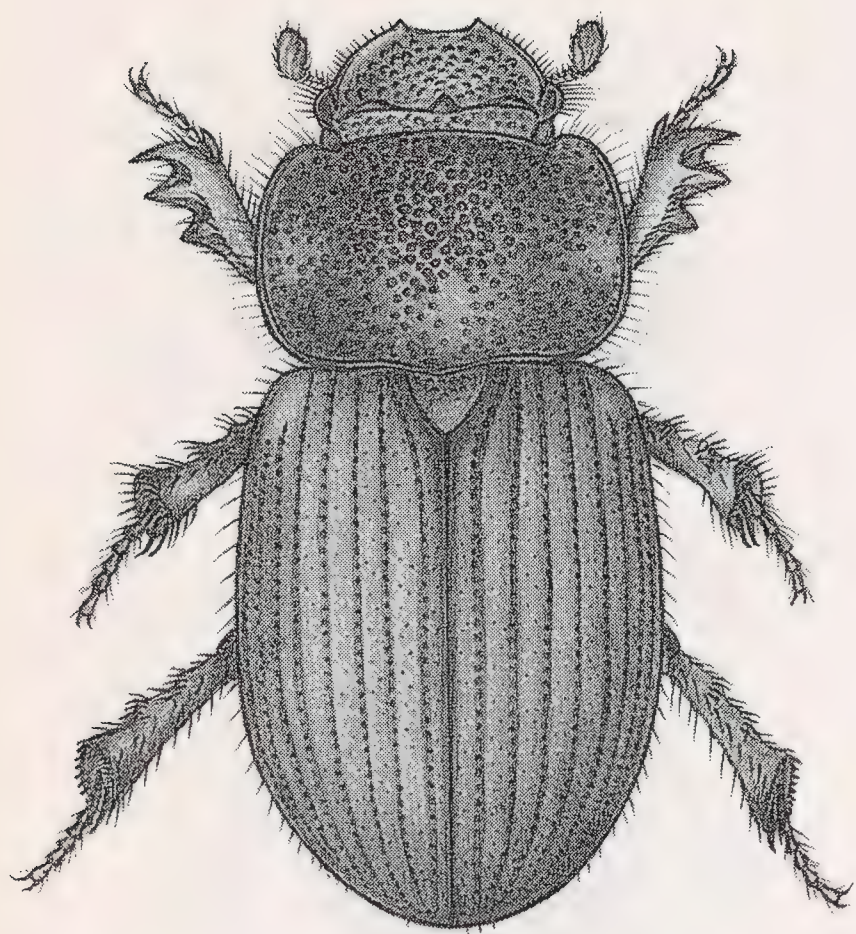
Fig. 635. *Mendidius fimbriolatus* (Mannerheim, 1849) (male, length 5 mm) (Russia, Transbaikalia, Wrechne-Udinsk)

Fig. 636. *Mesontoplatys rufolaterus* Motschulsky, 1863 (male, length 3 mm) (India; Tranquebar)

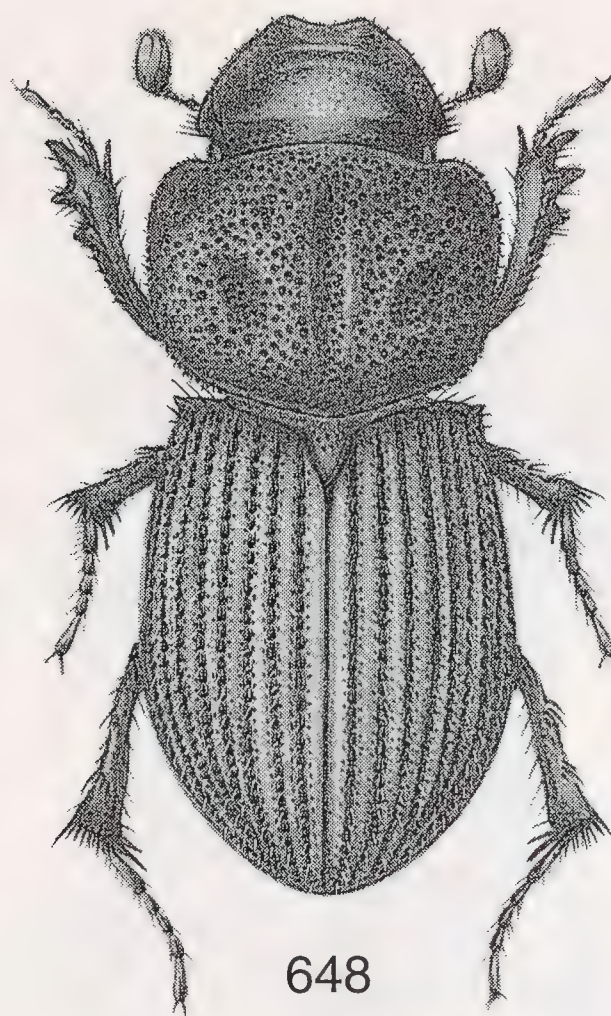
Fig. 637. *Microteuchestes brusewitzi* (Landin, 1974) (male, length 4 mm) (Ethiopia; Abbaya Lake)



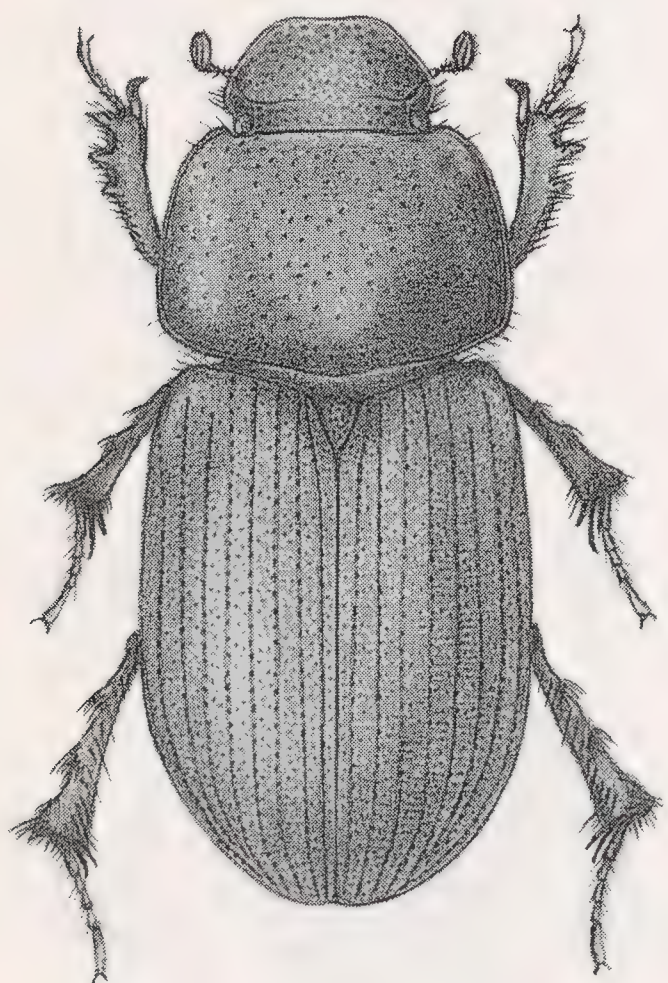
Figs 638-646. Epipharynx and aedeagus, dorsal and lateral view, of: 638-640 - *Mendidius fimbriolatus* (Mannerheim, 1849); 641-643 - *Mesontoplatys rufolaterus* Motschulsky, 1863; 644-646 - *Microteuchestes brusewitzi* (Landin, 1974)



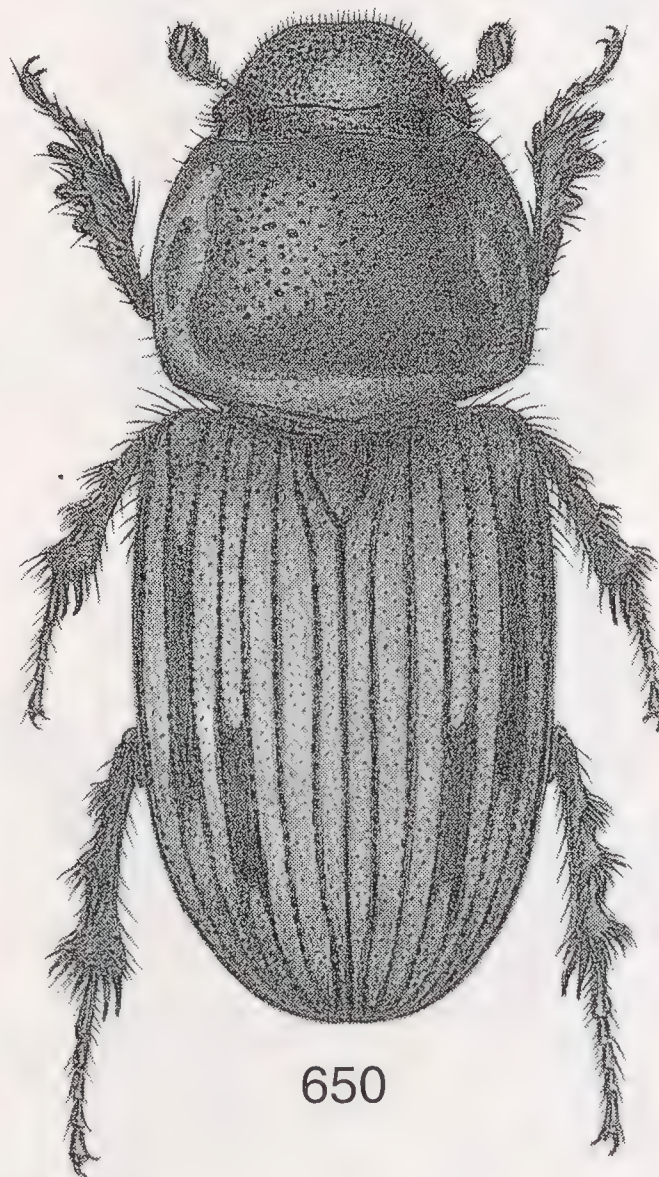
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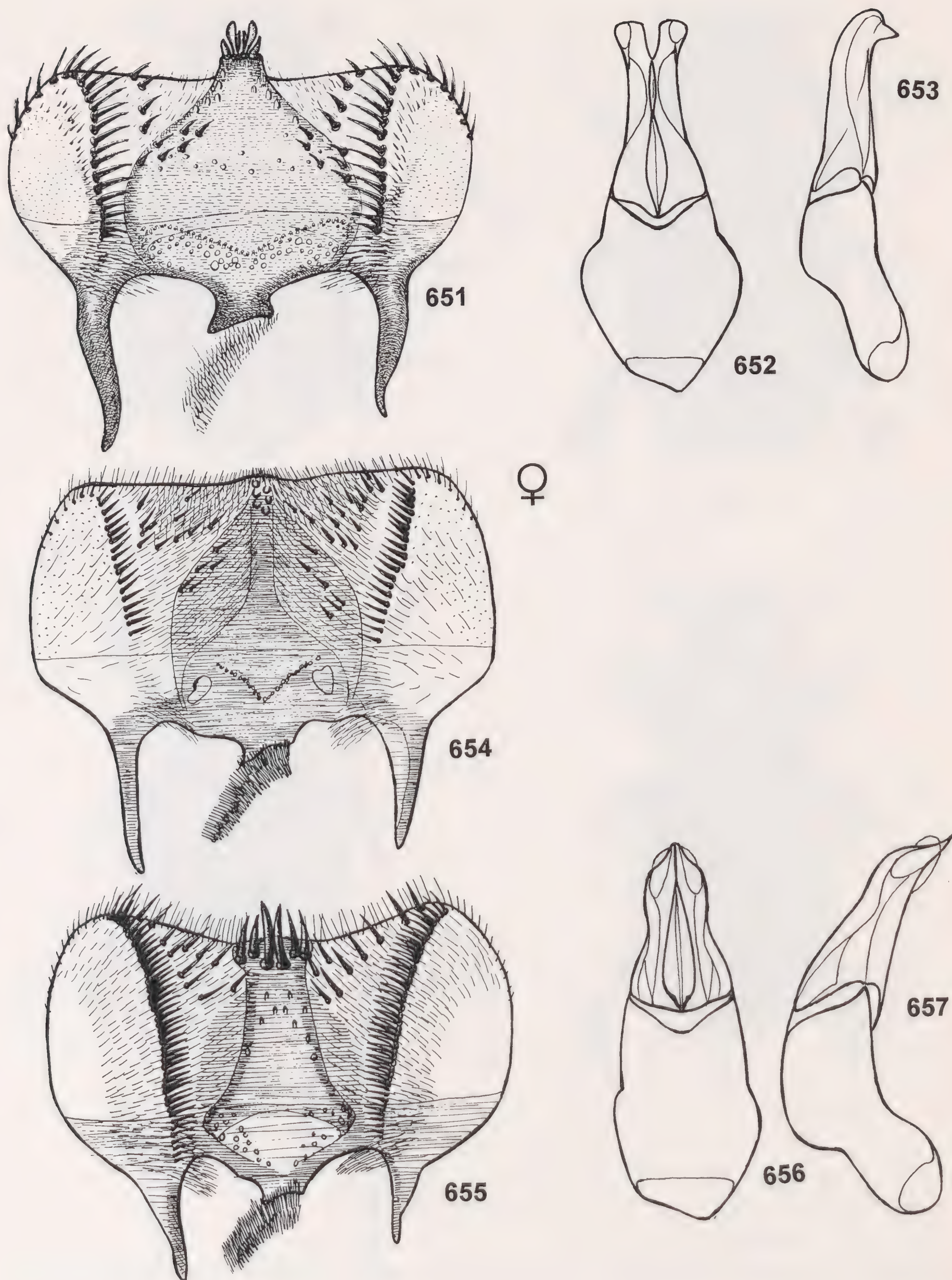
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Fig. 647. *Mothon sarmaticus* (Semenov & Medvedev, 1927) (male, length 5 mm) (Russia; cursus inf. Dniepr, Monast. Korsunskii)

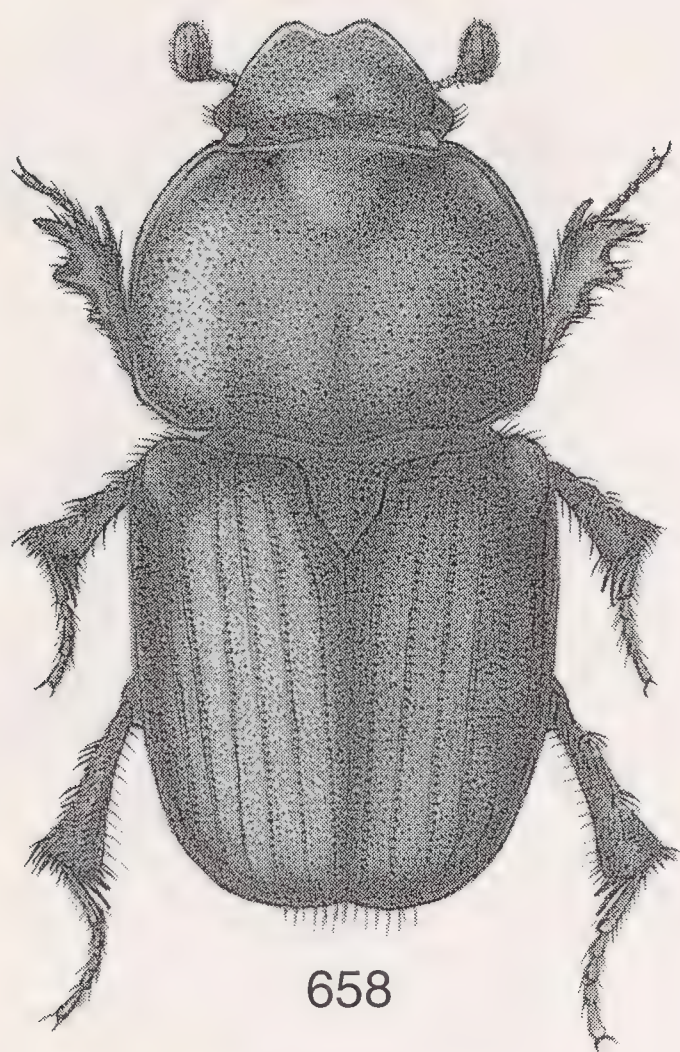
Fig. 648. *Mozartius testaceus* Nomura & Nakane, 1951 (female, length 4.5 mm) (Japan; Tokyo, Unoki, Oota-ku)

Fig. 649. *Neagolius falcispinis* (W. Koshantschikov, 1912) (male, length 4 mm) (Mongolia, Aimak Baian, Ulgij, Chasatyn-dava Pass)

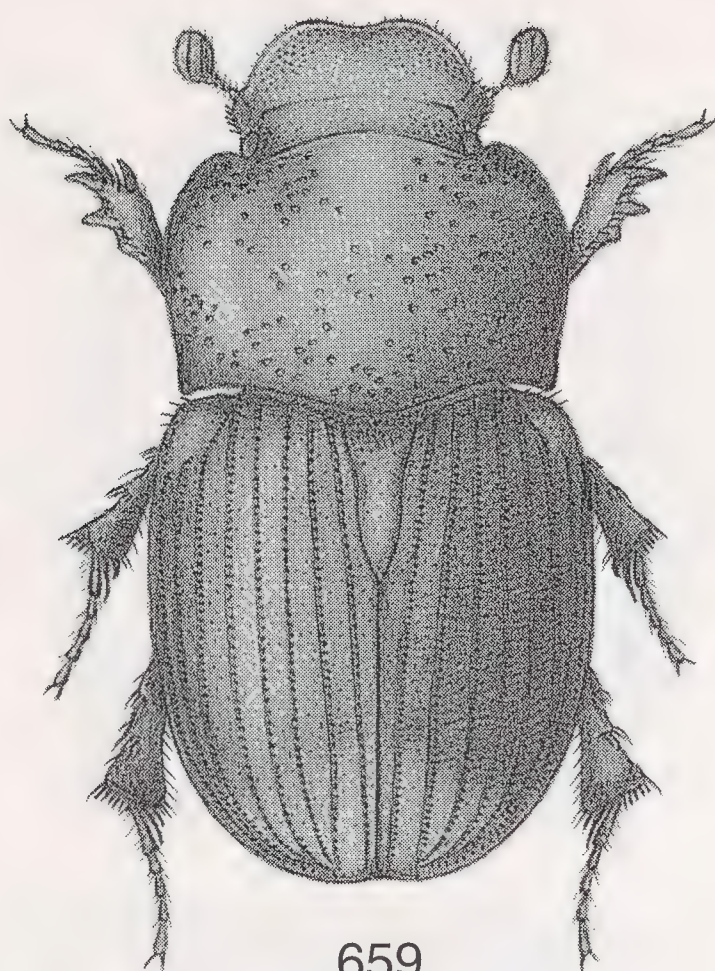
Fig. 650. *Neocalaphodius moestus* (Fabricius, 1801) (male, length 6 mm) (India; Tamil Nadu St., Kumili)



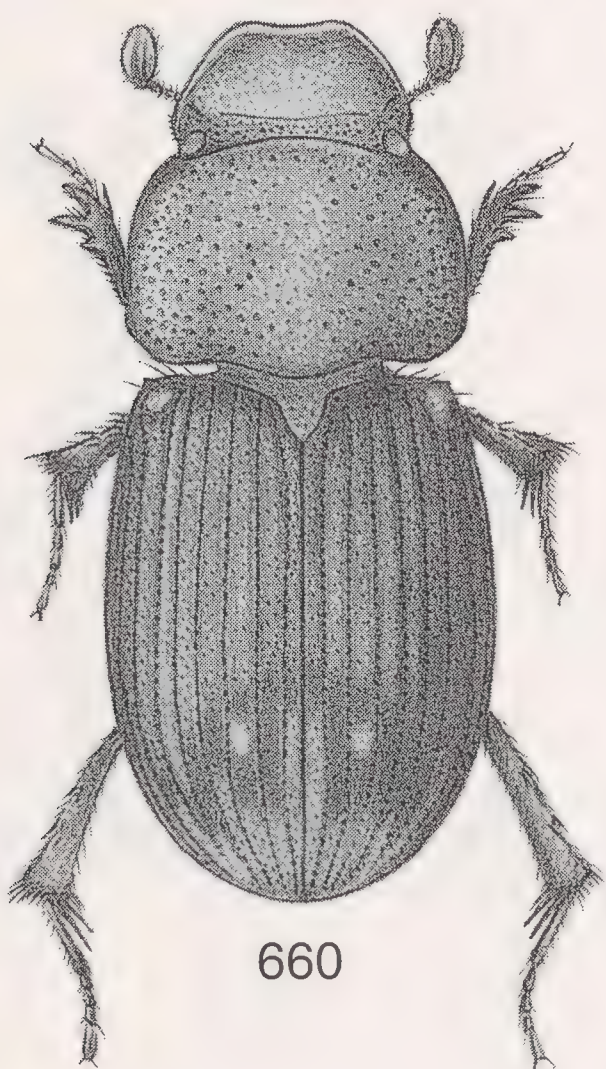
Figs 651-657. Epipharynx and aedeagus, dorsal and lateral view, of: 651-653 - *Mothon sarmaticus* (Semenov & Medved, 1927); 654 - *Mozartius testaceus* Nomura & Nakane, 1951; 655-657 - *Neagolius falcispinis* (W. Koshantschikov, 1912)



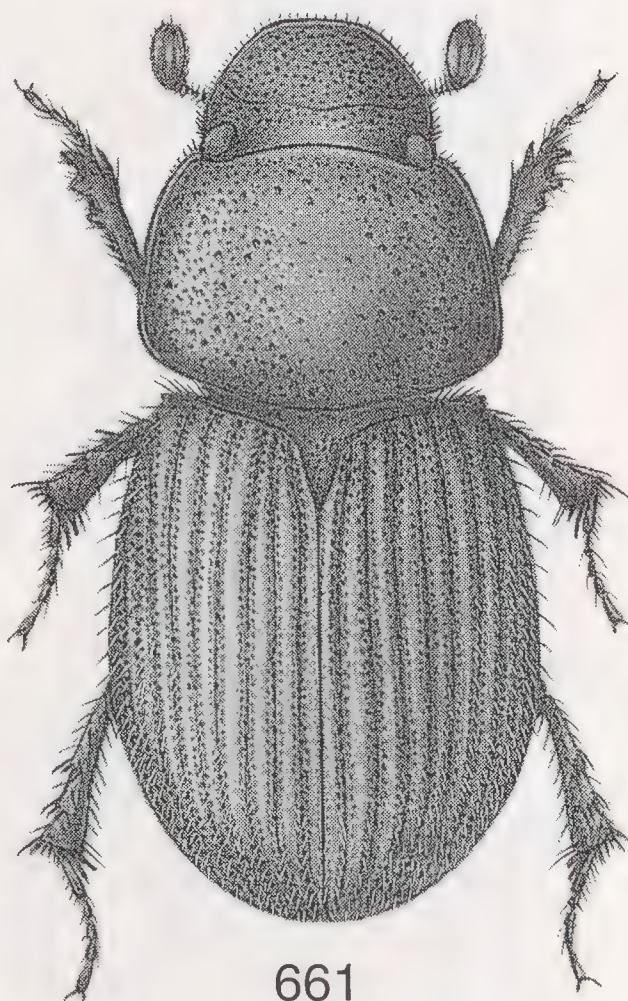
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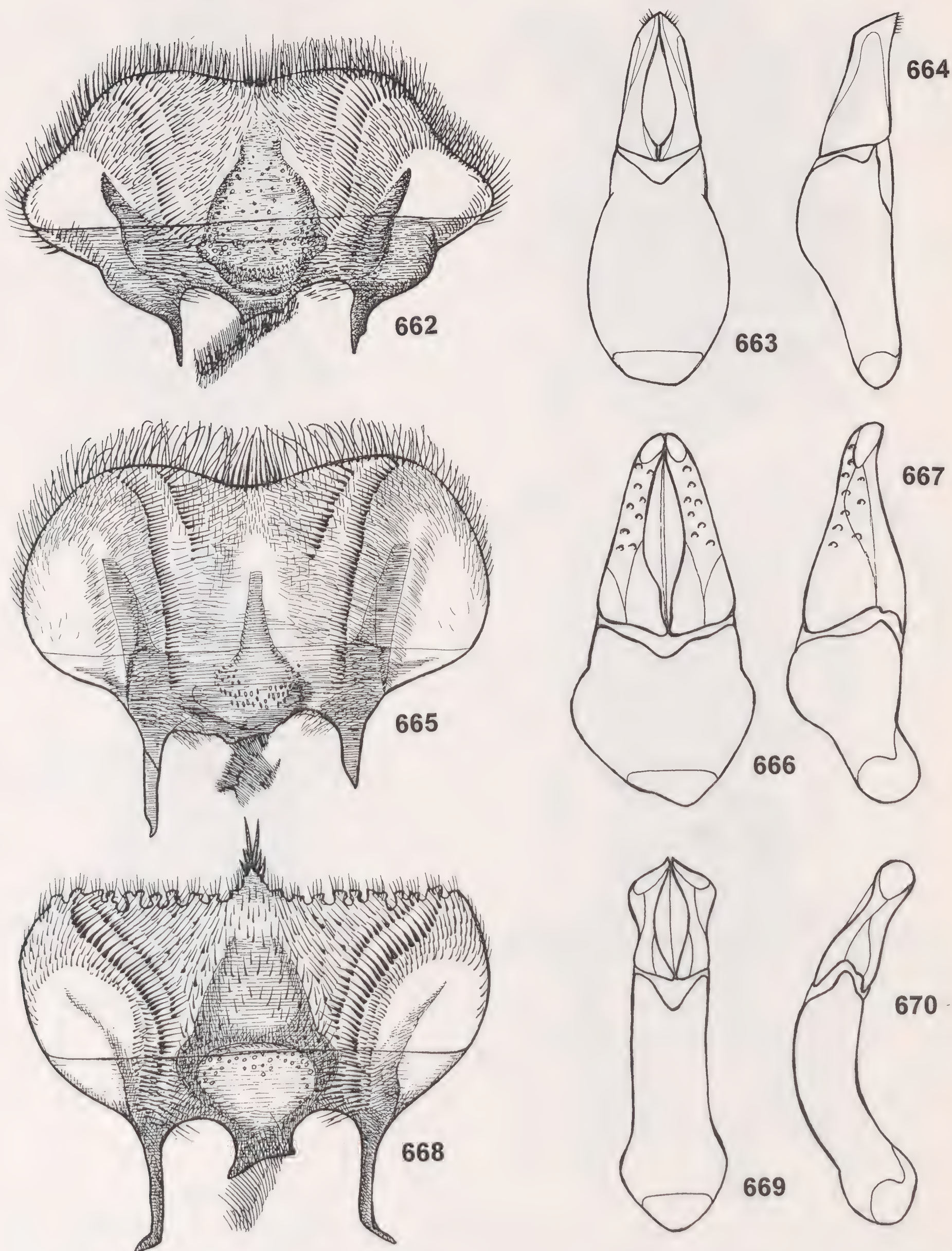
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Fig. 658. *Neocolobopterus abyssinicus* (Harold, 1861) (male, length 7 mm) (Ethiopia; Goba, Bale)

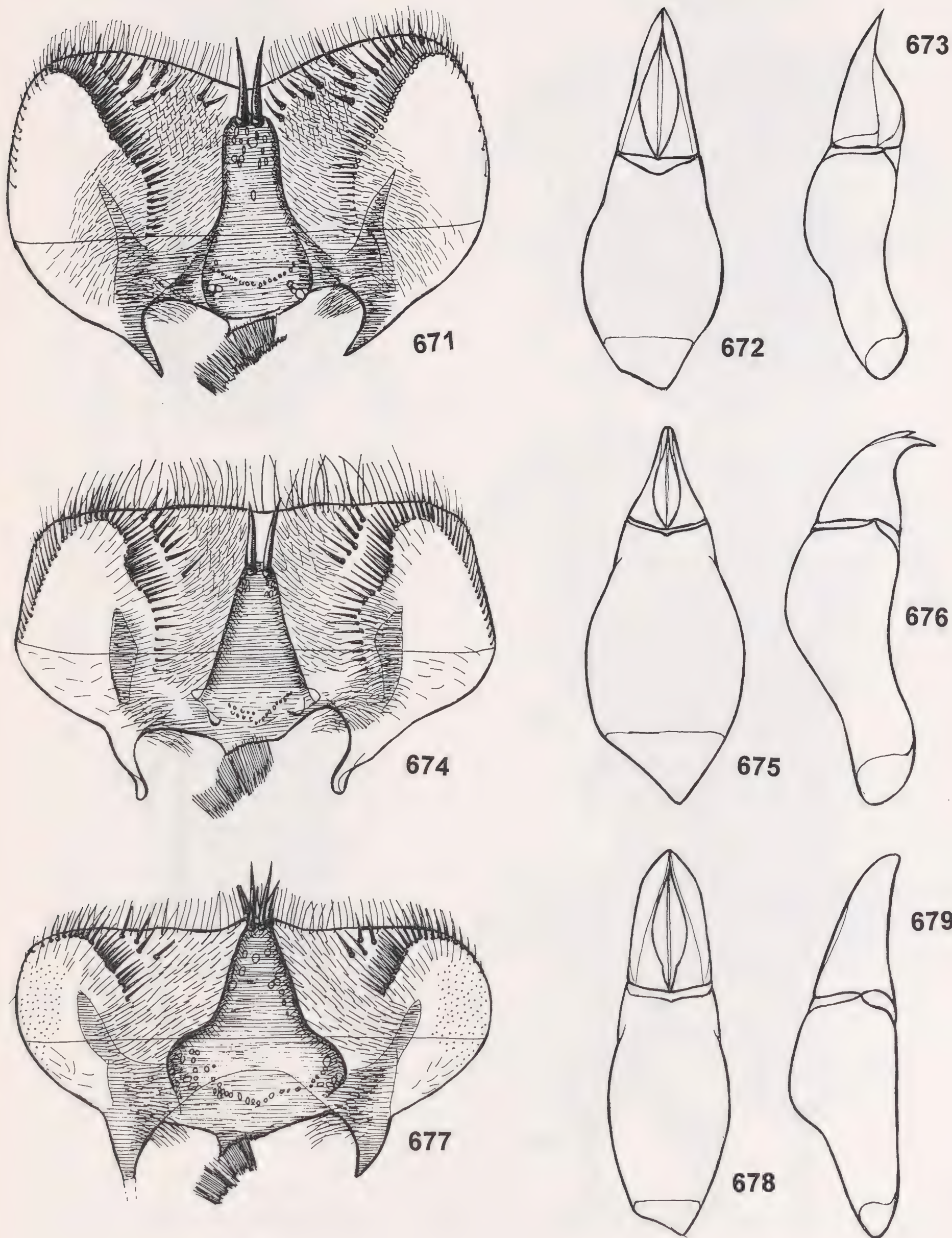
Fig. 659. *Neodiapterna erichsoni* (Harold, 1861) (male, length 8 mm) (Brazil; Goyaz)

Fig. 660. *Neoemadiellus uxoris* (Clément, 1986) (male, length 3.5 mm) (Madagascar; Fianarantsoa, Ranomafana)

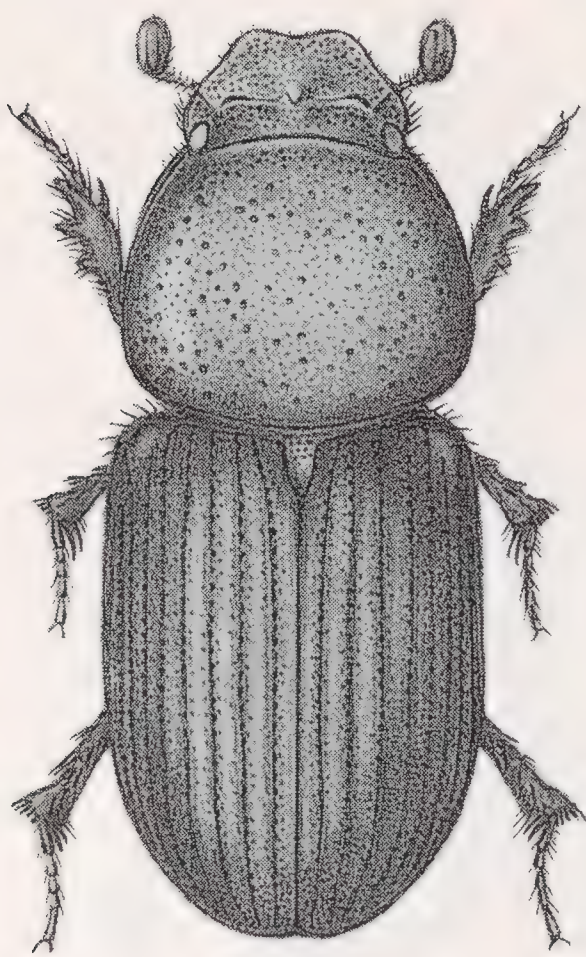
Fig. 661. *Neoheptaulacus puberulus* (Boheman, 1857) (male, length 5 mm) (South Africa; Zululand, Hluhlowe game res.)



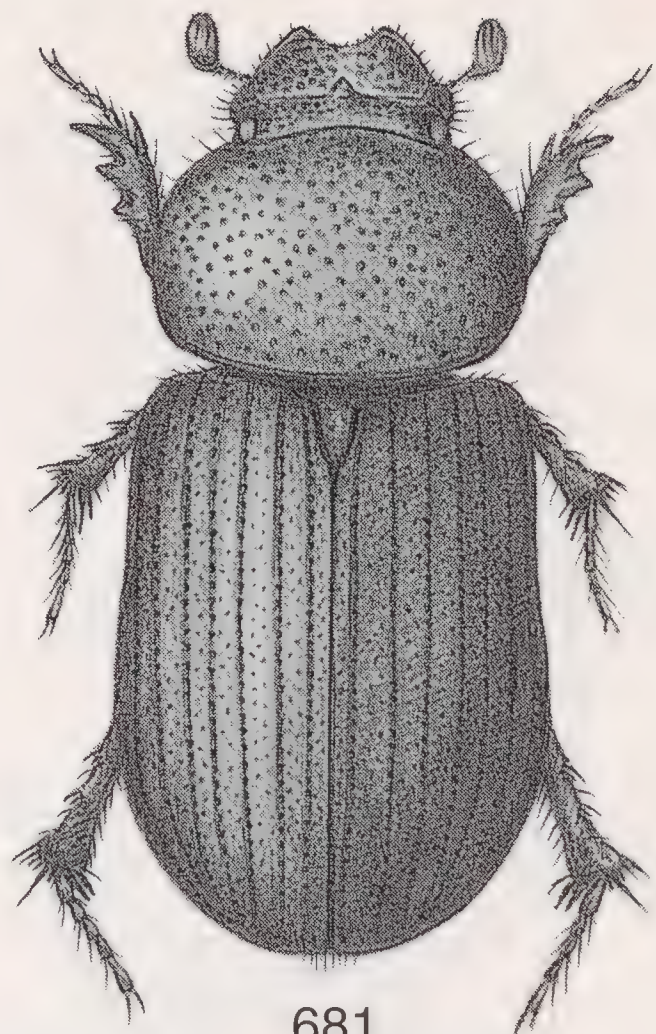
Figs 662-670. Epipharynx and aedeagus, dorsal and lateral view, of: 662-664 - *Neocalaphodius moestus* (Fabricius, 1801); 665-667 - *Neocolobopterus abyssinicus* (Harold, 1861); 668-670 - *Neodiapterna erichsoni* (Harold, 1861)



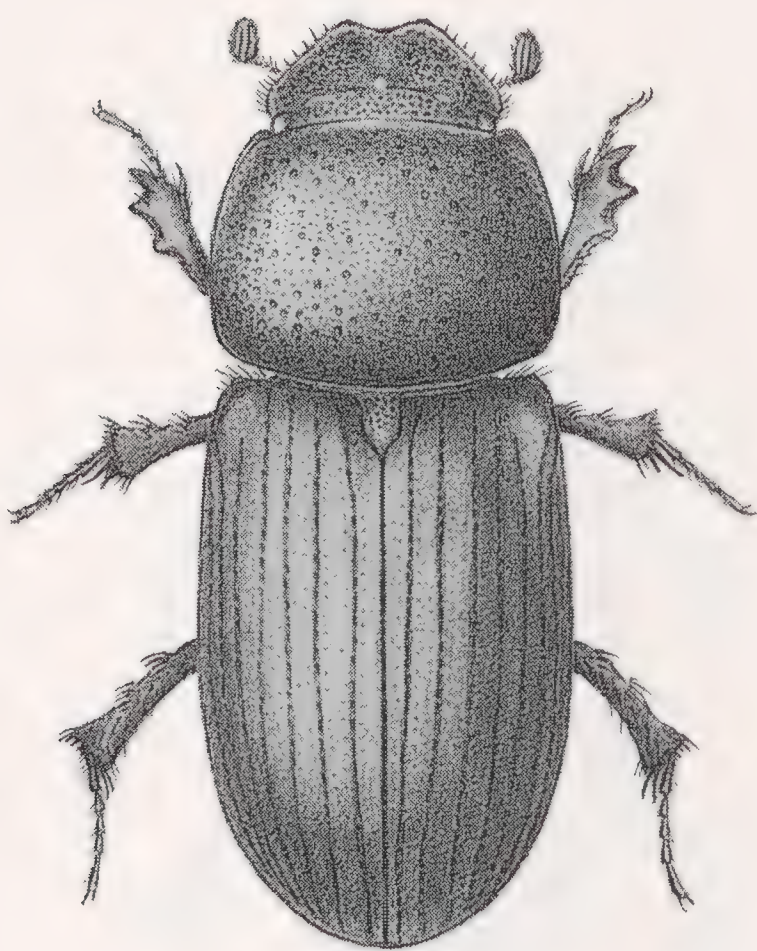
Figs 671-679. Epipharynx and aedeagus, dorsal and lateral view, of: 671-673 - *Neoemadiellus uxoris* (Clément, 1986); 674-676 - *Neoheptaulacus puberulus* (Boheman, 1857); 677-679 - *Nialaphodius nigrita* (Fabricius, 1801)



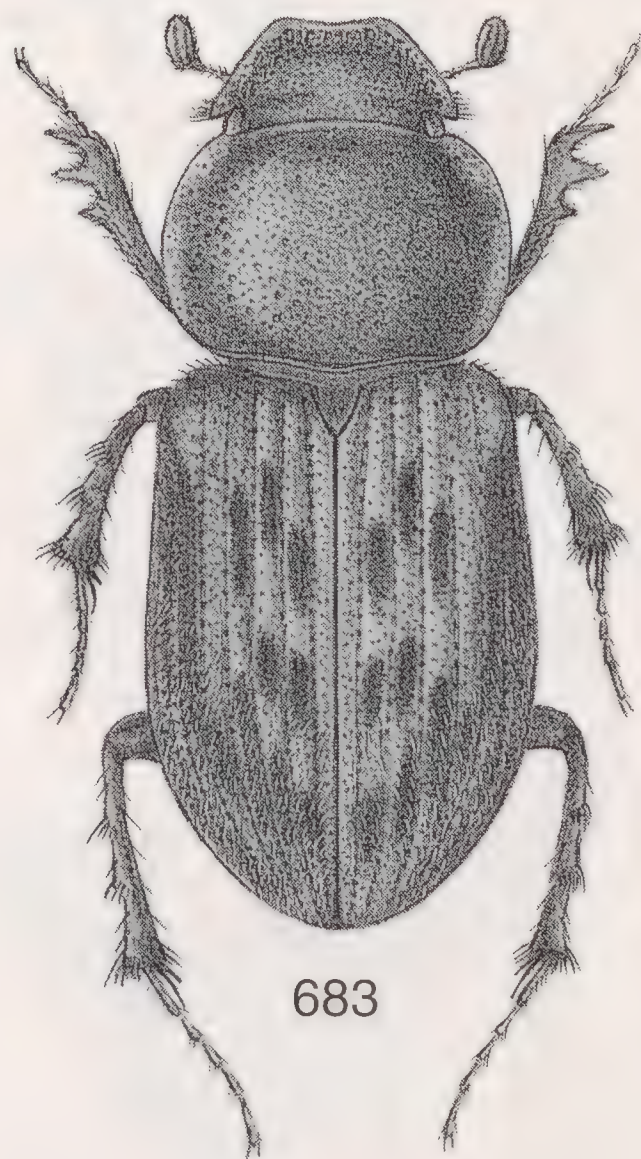
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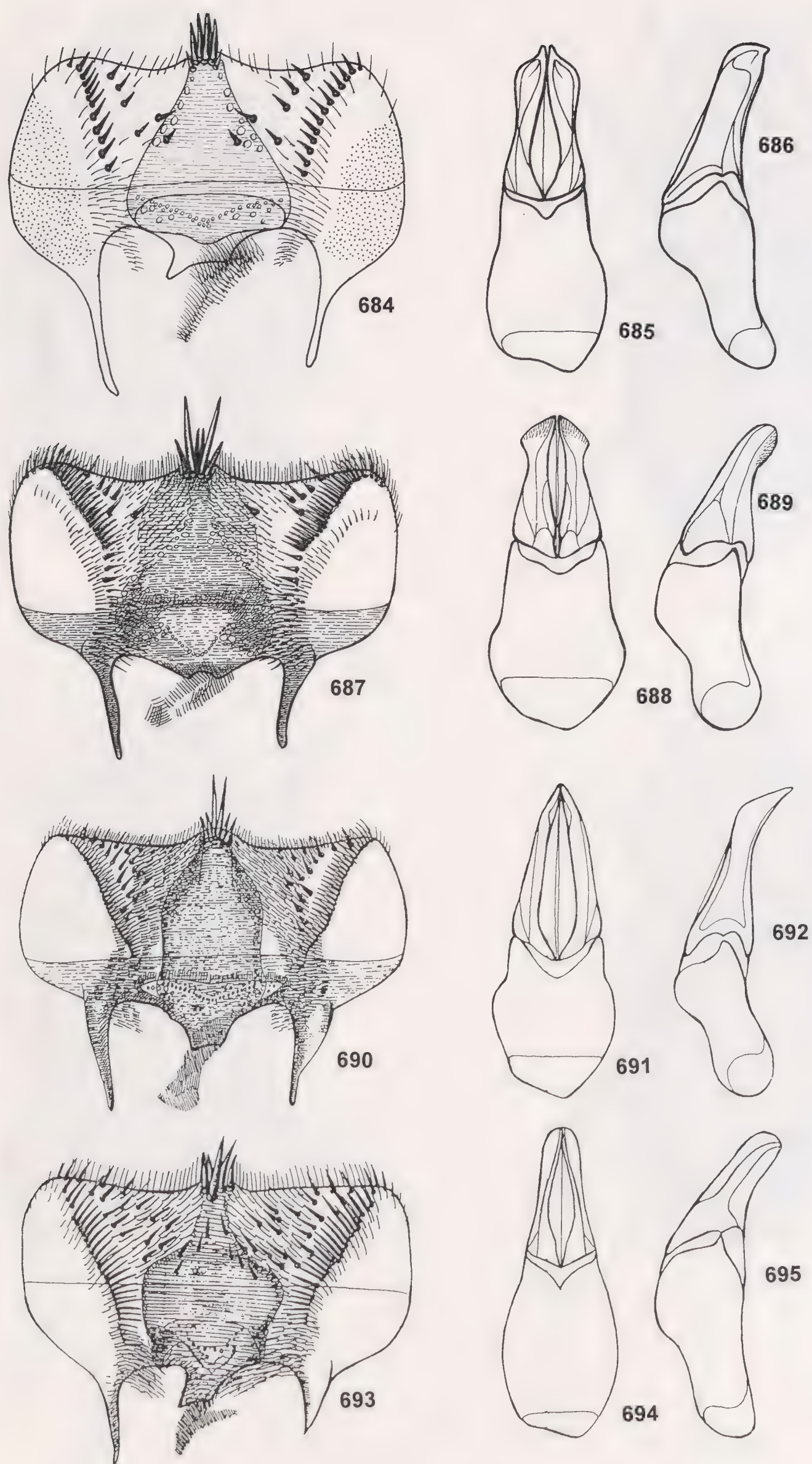
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Fig. 680. *Nialaphodius nigrita* (Fabricius, 1801) (male, length 4 mm) (Niger; Niamey env.)

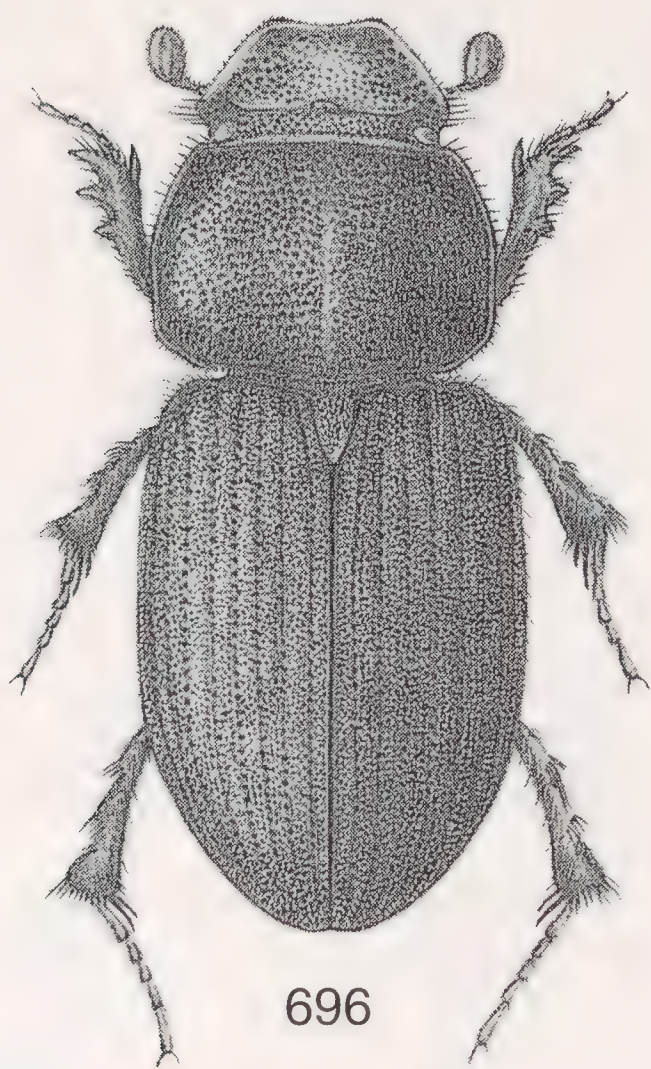
Fig. 681. *Nialosternus sitiphoides* (Orbigny, 1896) (male, length 4.5 mm) (Libya; Tripolitania, Uadi Fruten)

Fig. 682. *Nialus varians* (Duftschmid, 1805) (male, length 5 mm) (Italy; Basilicata, Matera, Metaponto)

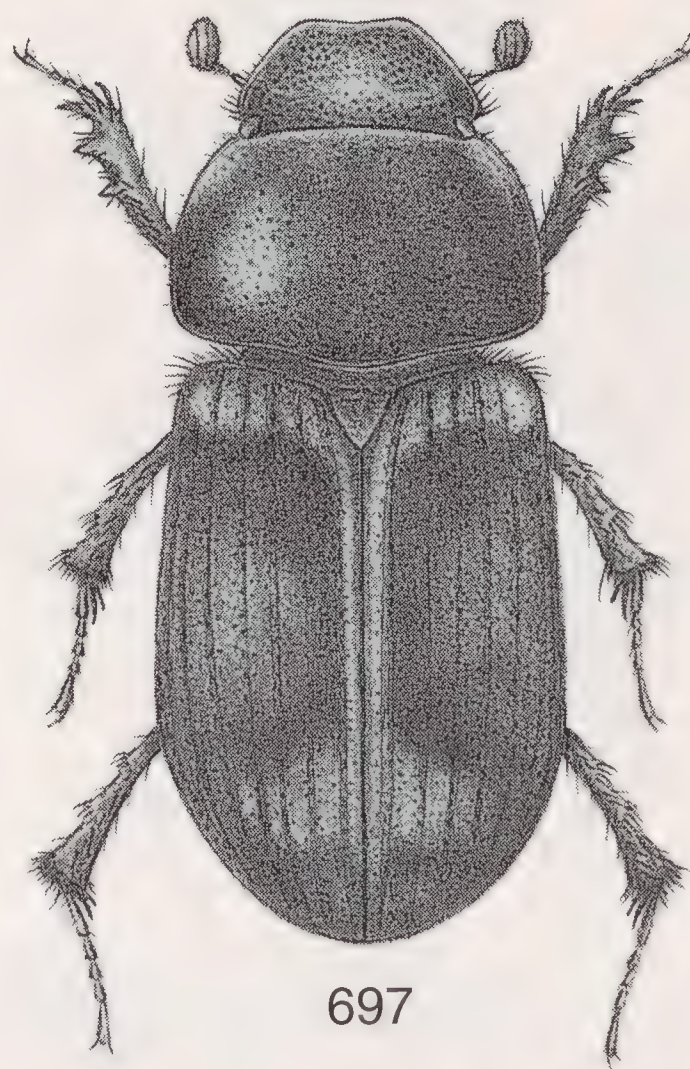
Fig. 683. *Nimbus obliteratus* (Panzer, 1823) (male, length 6 mm) (Italy; Liguria, Savona, Monte San Giorgio)



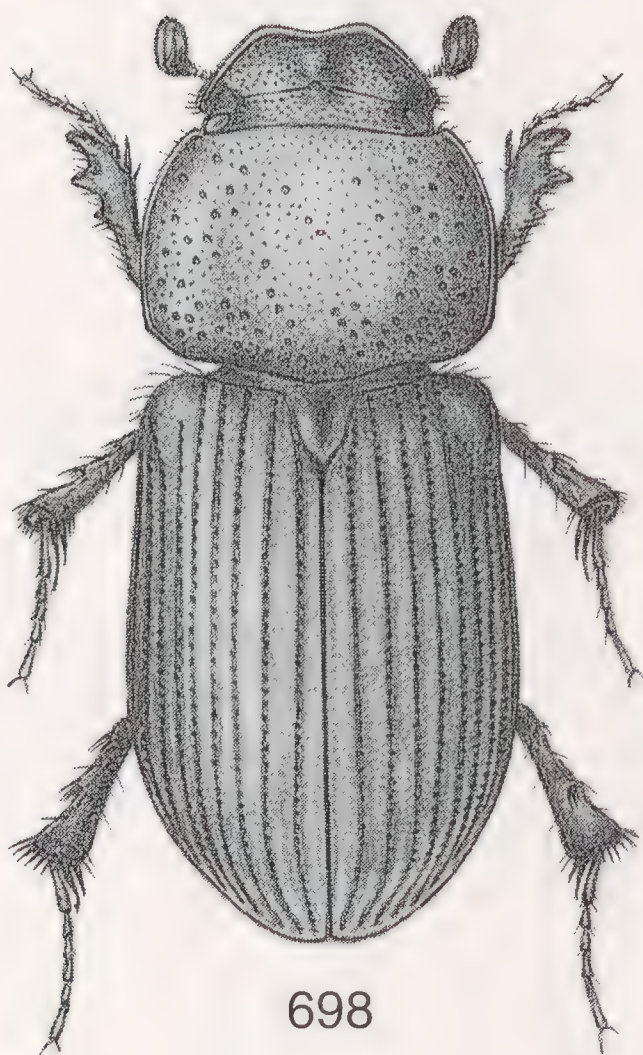
Figs 684-692. Epipharynx and aedeagus, dorsal and lateral view, of: 684-686 - *Nialosternus sitiphoides* (Orbigny, 1896); 687-689 - *Nialus varians* (Duftschmid, 1805) - *Nimbus obliteratedus* (Panzer, 1823); 693-695 - *Nipponaphodius gotoi* (Nomura & Nakane, 1951)



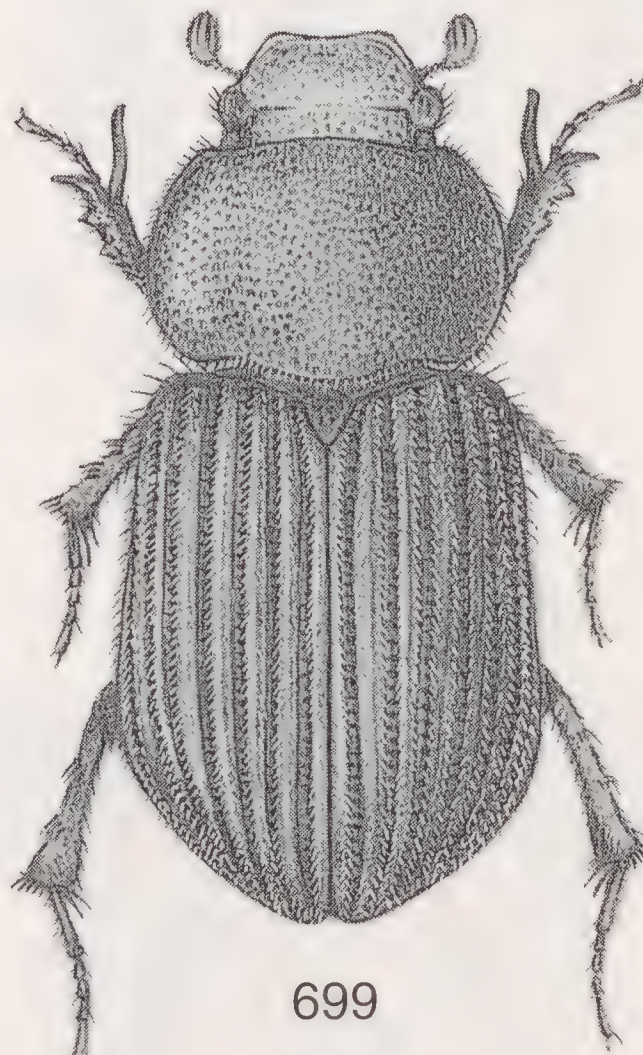
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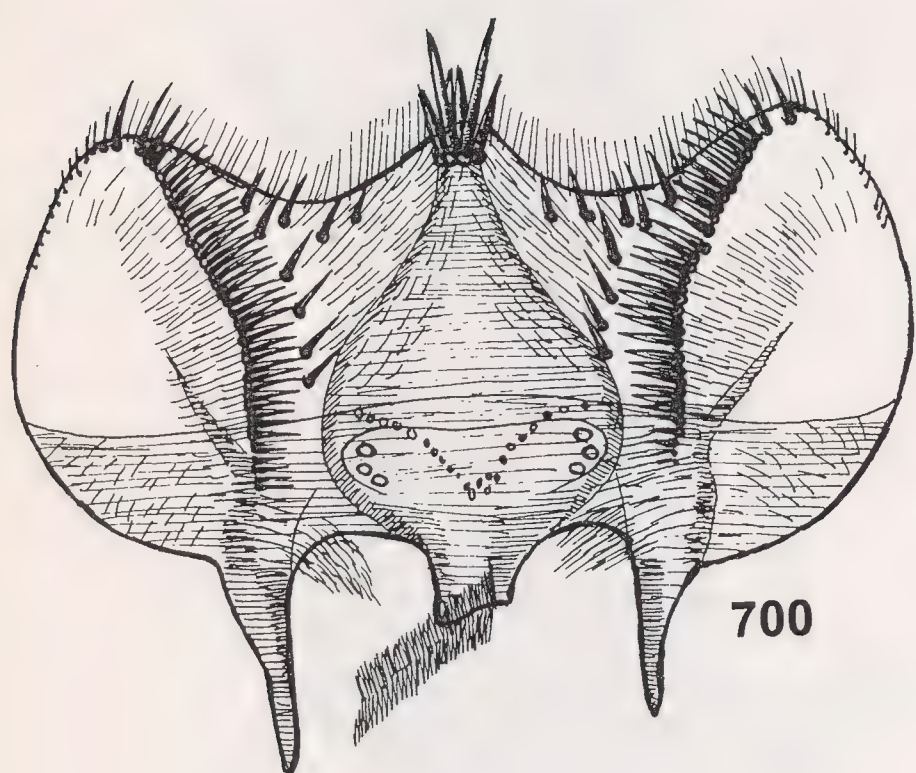
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Fig. 696. *Nipponaphodius gotoi* (Nomura & Nakane, 1951) (male, length 5 mm) (Japan; Nagano Pref., Kawakami, Minamisaku)

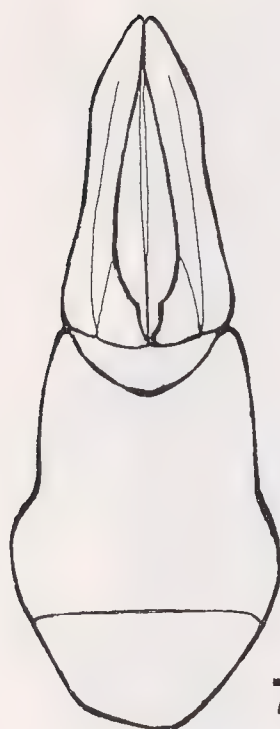
Fig. 697. *Nobius serotinus* (Panzer, 1799) (male, length 5 mm) (Slovenia; Lipica)

Fig. 698. *Nolicus veteranus* (Petrovitz, 1962) (male, length 7 mm) (Namibia; Kaokoveld, Ohopoho)

Fig. 699. *Obaphodius silvestris* (Bordat, 1988) (male, length 4.2 mm) (South Africa, Transkei, Dwesa Forest)



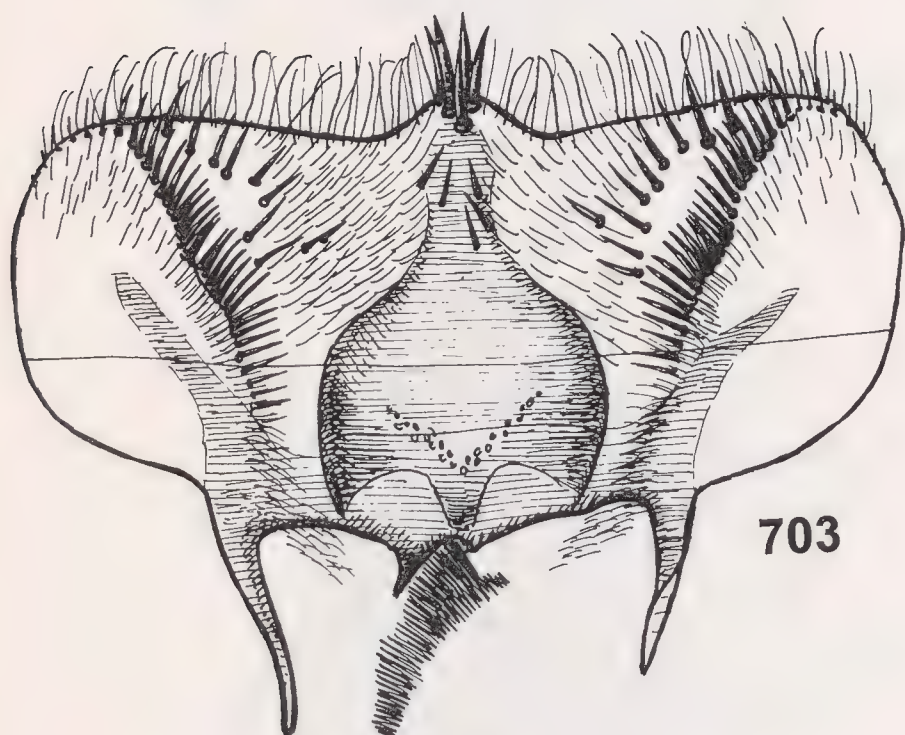
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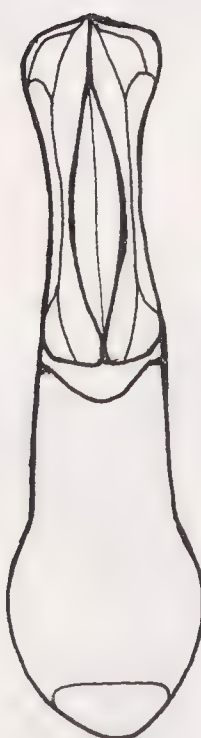
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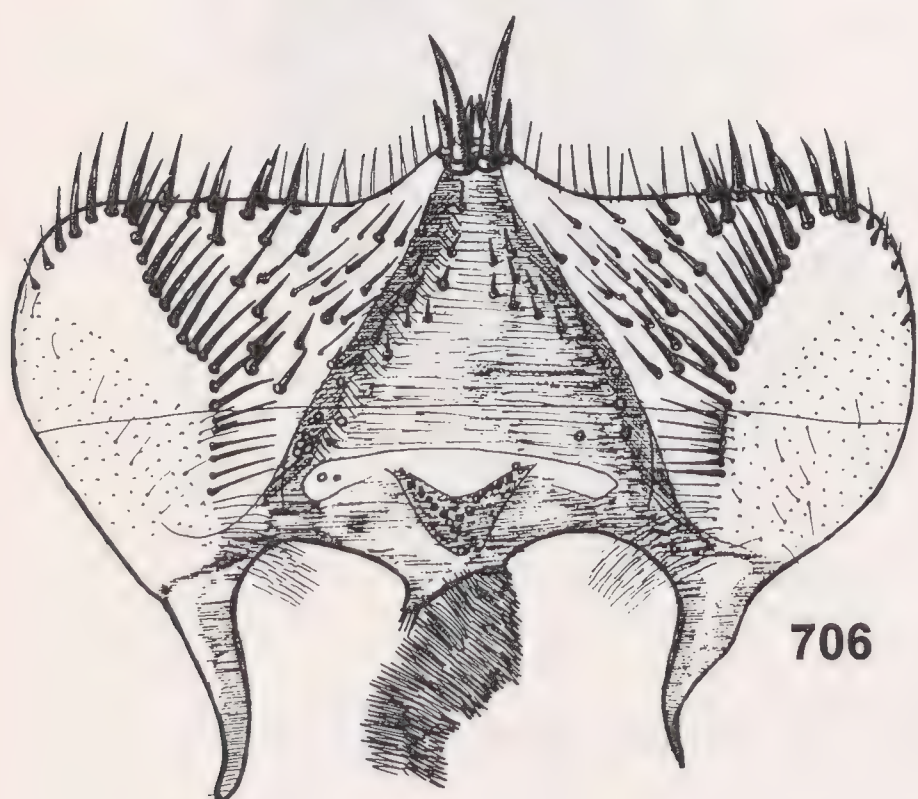
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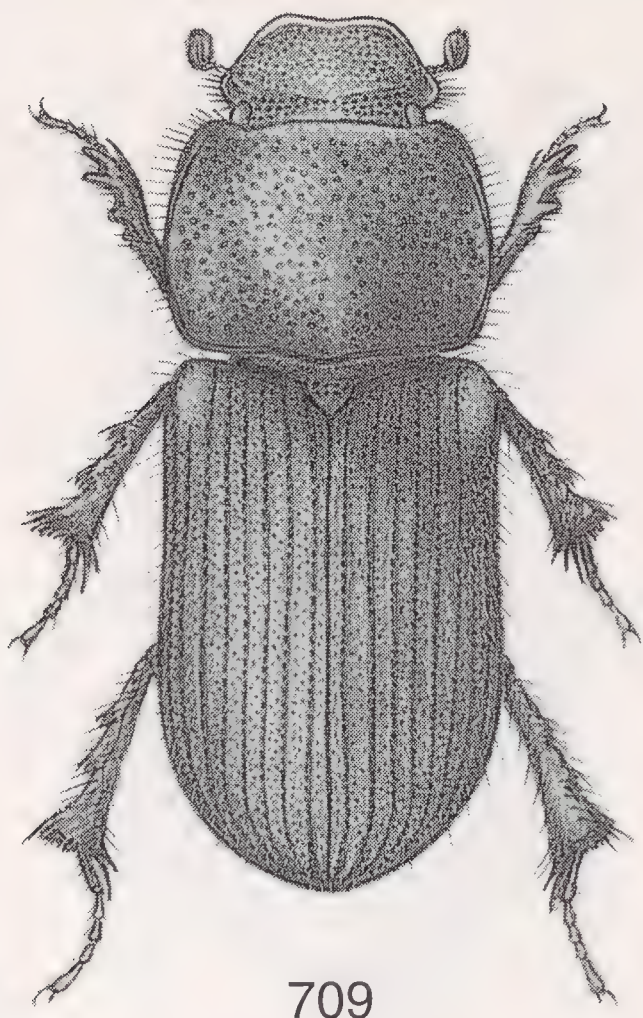


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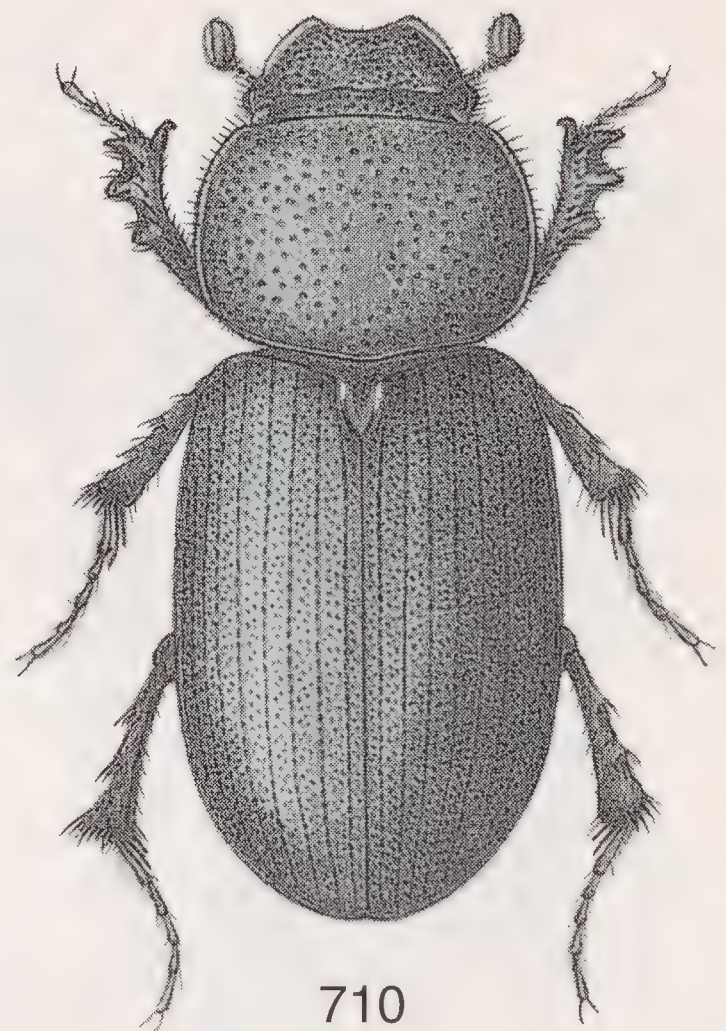


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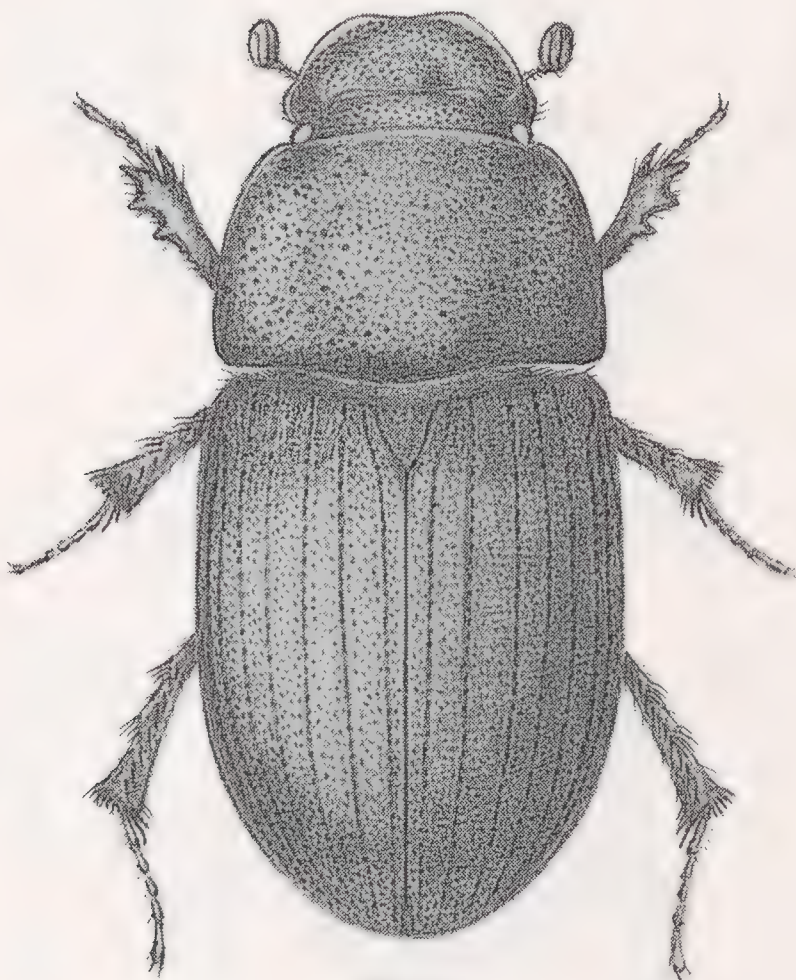
Figs 700-708. Epipharynx and aedeagus, dorsal and lateral view, of: 700-702 - *Nobius serotinus* (Panzer, 1799); 703-705 - *Nolicus veteranus* (Petrovitz, 1962); 706-708 - *Obaphodius silvestris* (Bordat, 1988)



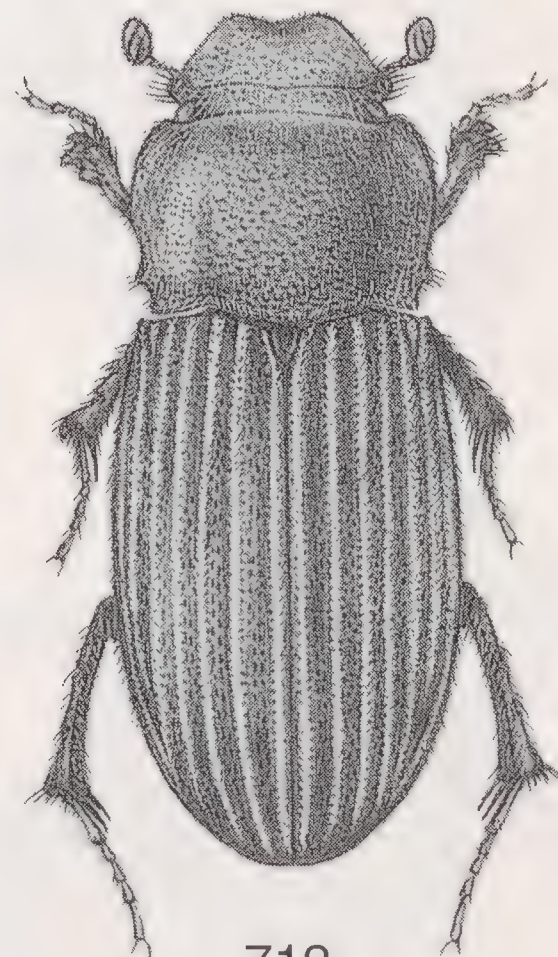
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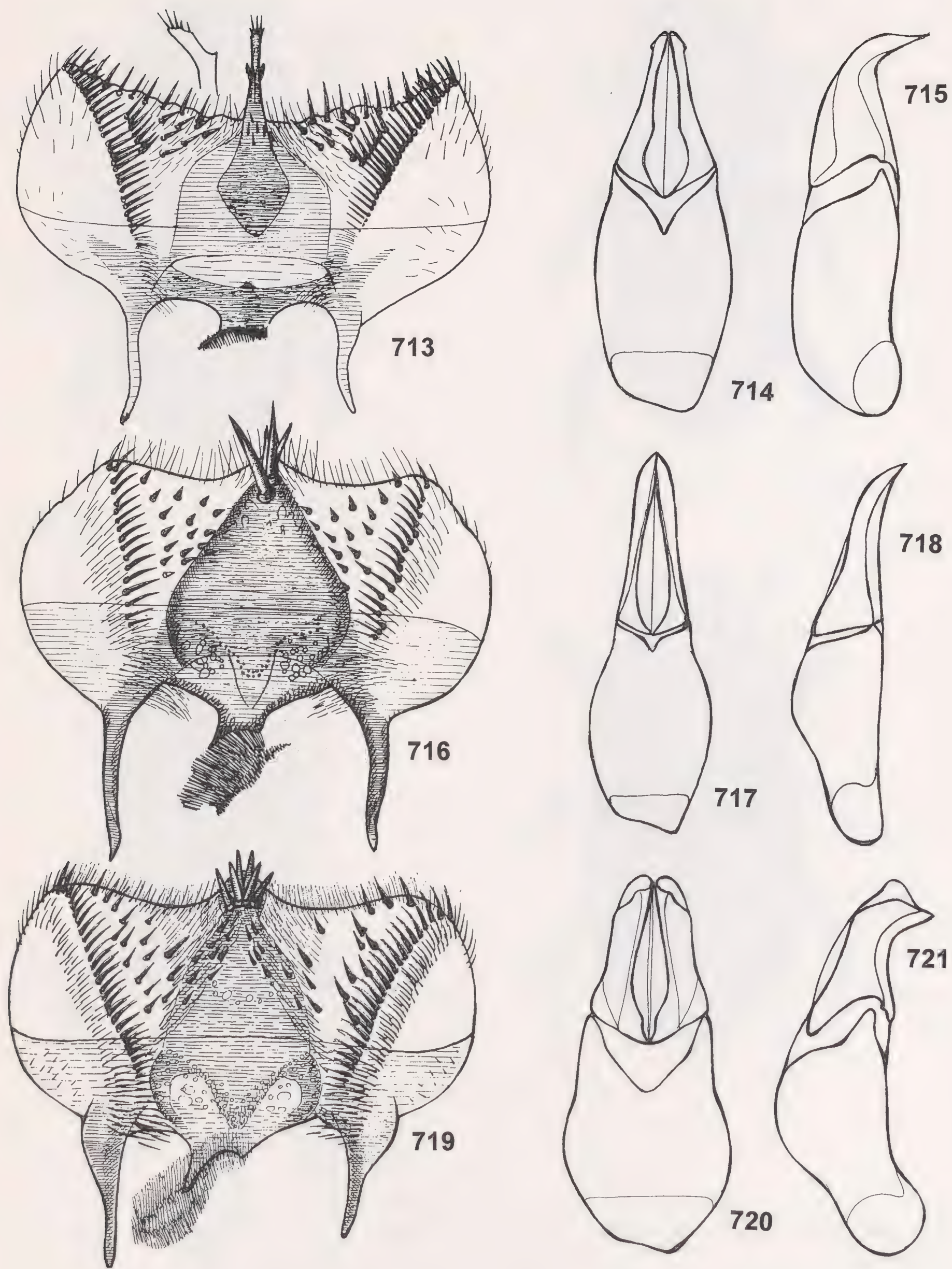
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Fig. 709. *Orodaliscoides rugosiceps* (Harold, 1859) (male, length 6.5 mm) (Chile; Valparaiso, La Campana)

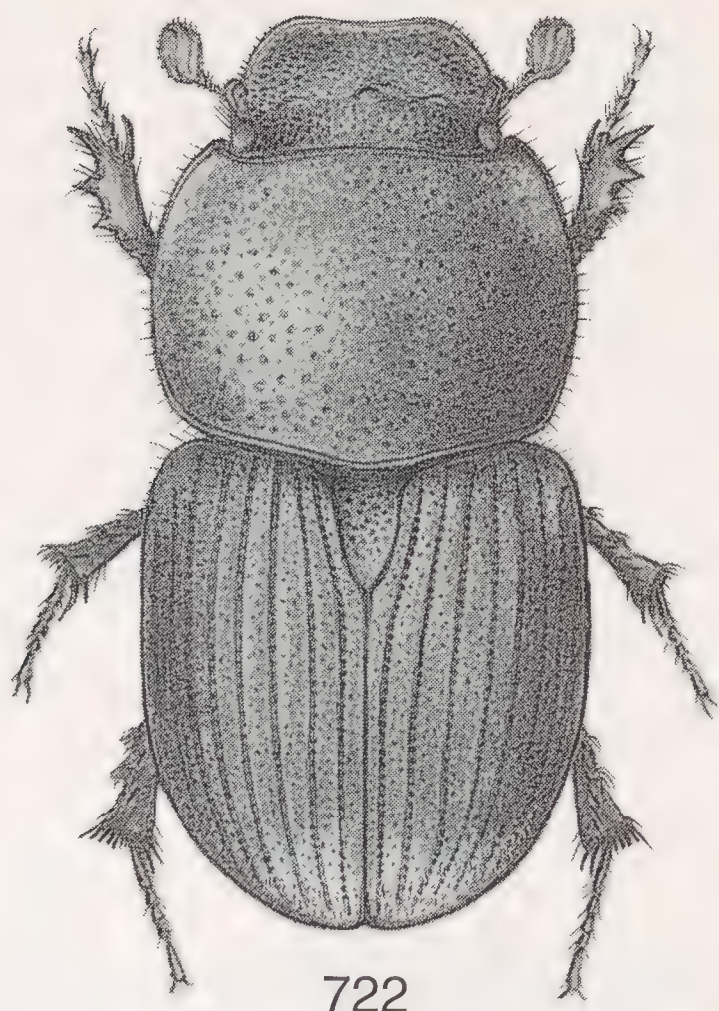
Fig. 710. *Orodaliscus rotundangulus* (Reitter, 1900) (male, length 5.5 mm) (Russia; Blackland Reg., Kalmytakaya)

Fig. 711. *Oromus alpinus* (Scopoli, 1763) (male, length 5 mm) (Italy; Piemonte, Alpi Liguri, Cima Missun)

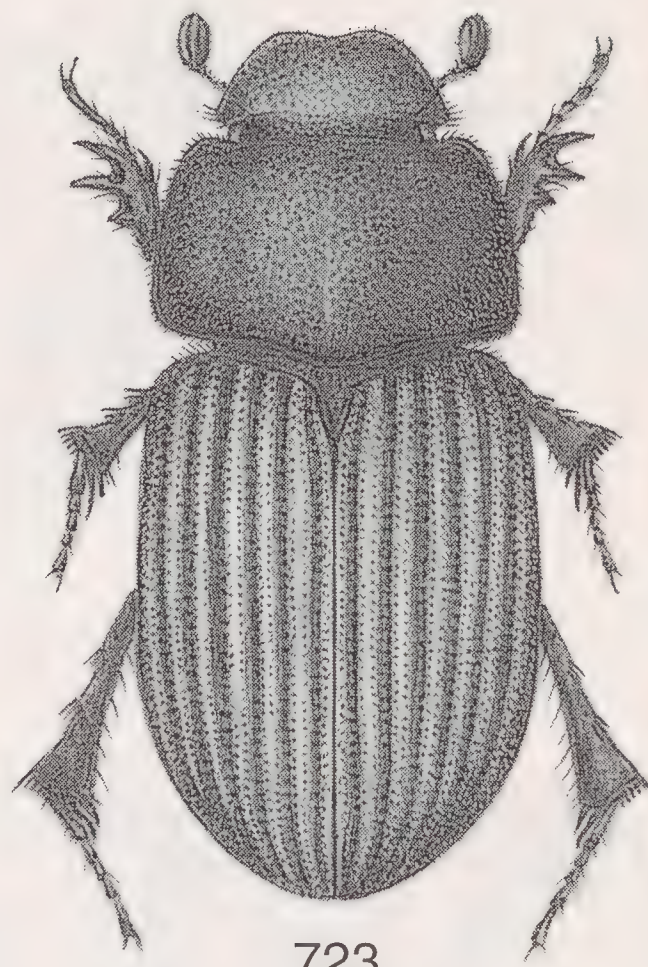
Fig. 712. *Osmanius balthasari* (Petrovitz, 1963) (male, length 5 mm) (Turkey; Vil. Konya, Yesilköy)



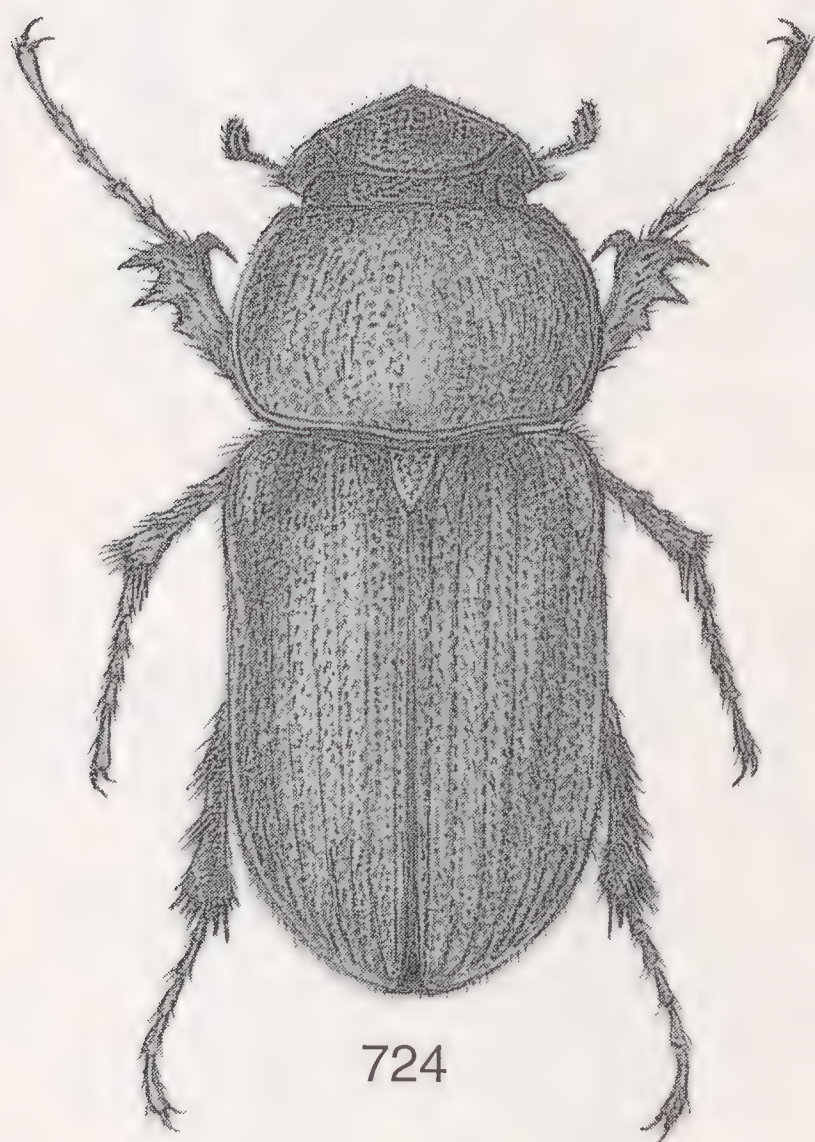
Figs 713-721. Epipharynx and aedeagus, dorsal and lateral view, of: 713-715 - *Orodaliscoides rugosiceps* (Harold, 1859); 716-718 - *Orodaliscus rotundangulus* (Reitter, 1900); 719-721 - *Oromus alpinus* (Scopoli, 1763).



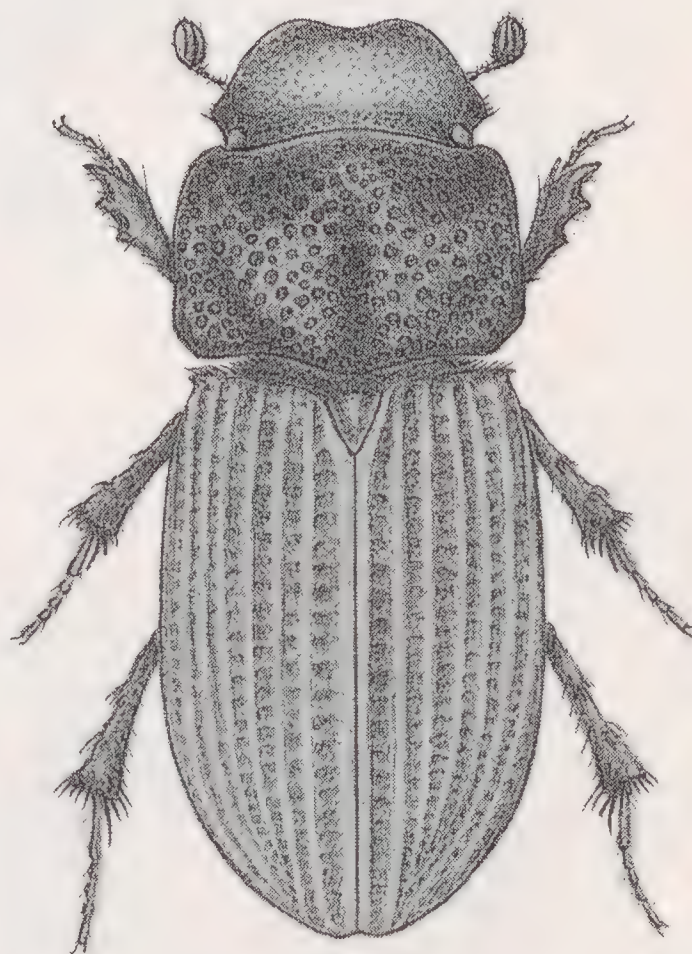
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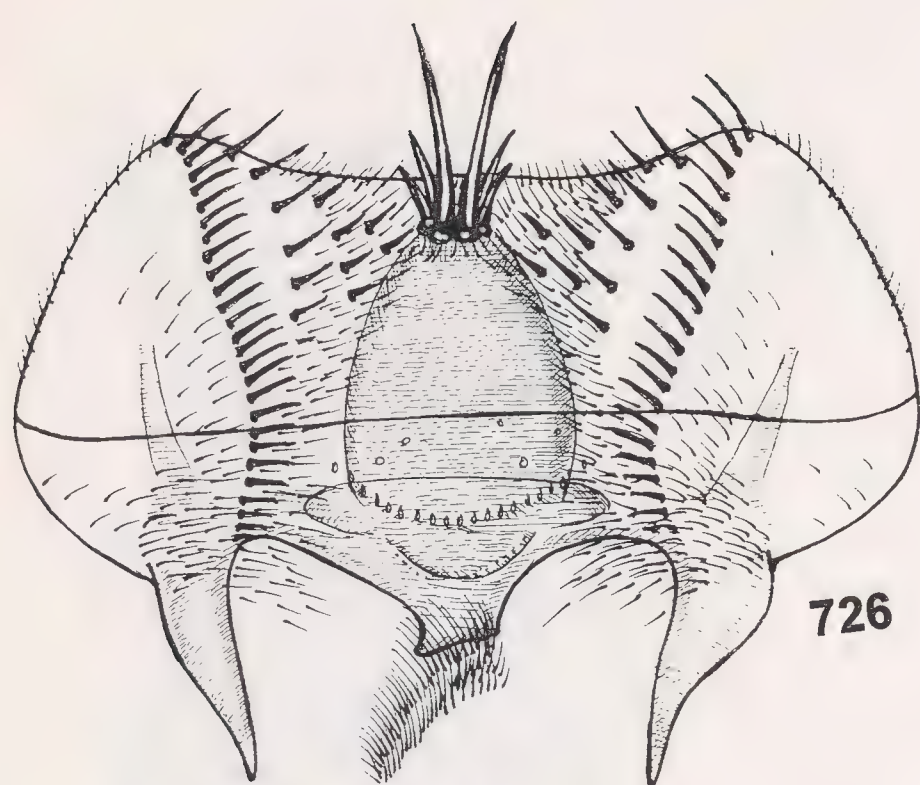
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Fig. 722. *Otophorus haemorrhoidalis* (Linné, 1758) (male, length 5 mm) (Italy; Liguria, Savona, Monte San Giorgio)

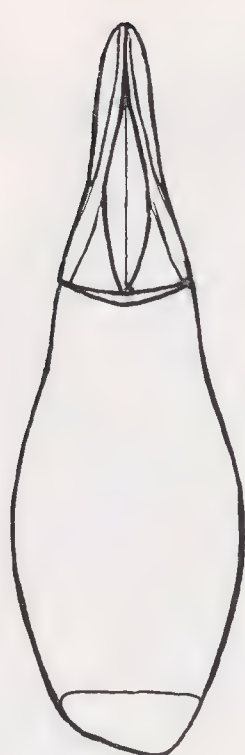
Fig. 723. *Oxyaphodius sikkimensis* (Balthasar, 1965) (male, length 6 mm) (Nepal; Thodung, 3200 m)

Fig. 724. *Oxycorythus morawitzi* Solsky, 1876 (male, length 4 mm) (Tadzikistan; Dushambe)

Fig. 725. *Oxyomus sylvestris* (Scopoli, 1763) (male, length 3.5 mm) (Italy; Liguria, Savona, Monte San Giorgio)



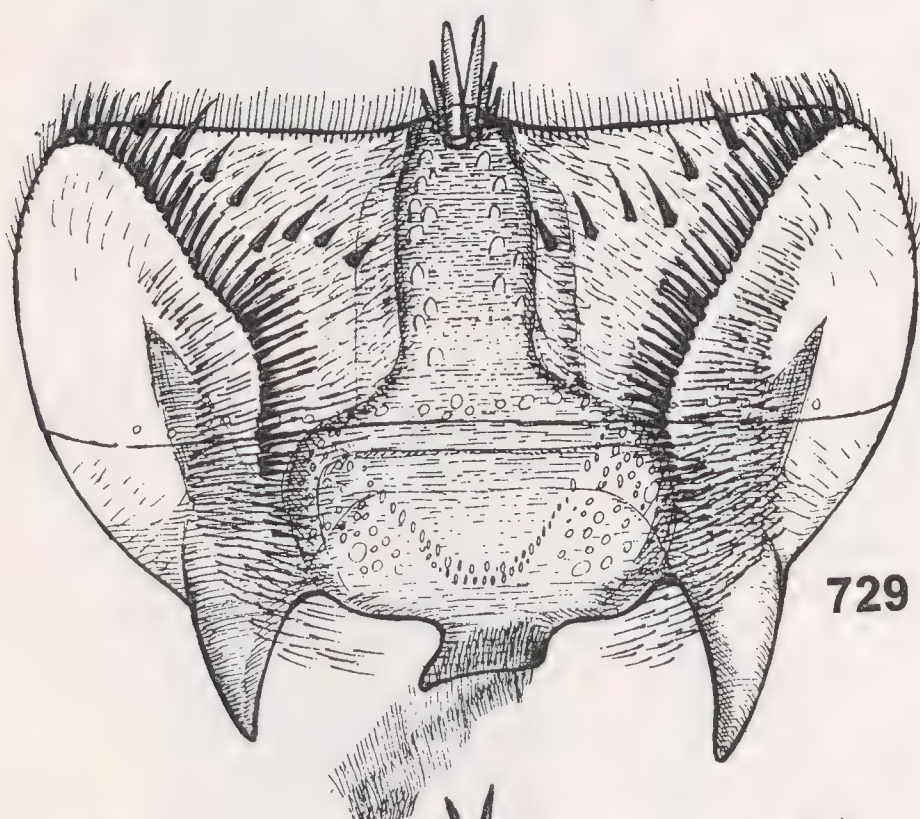
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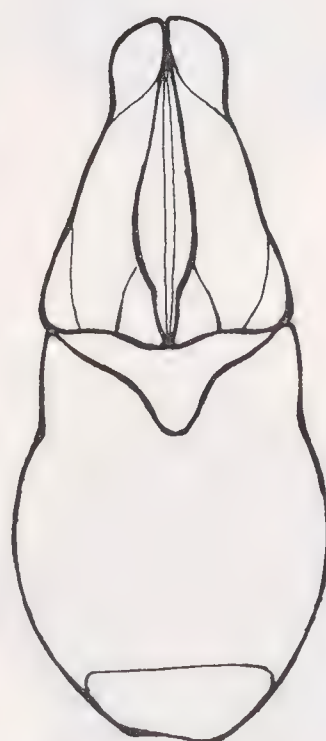
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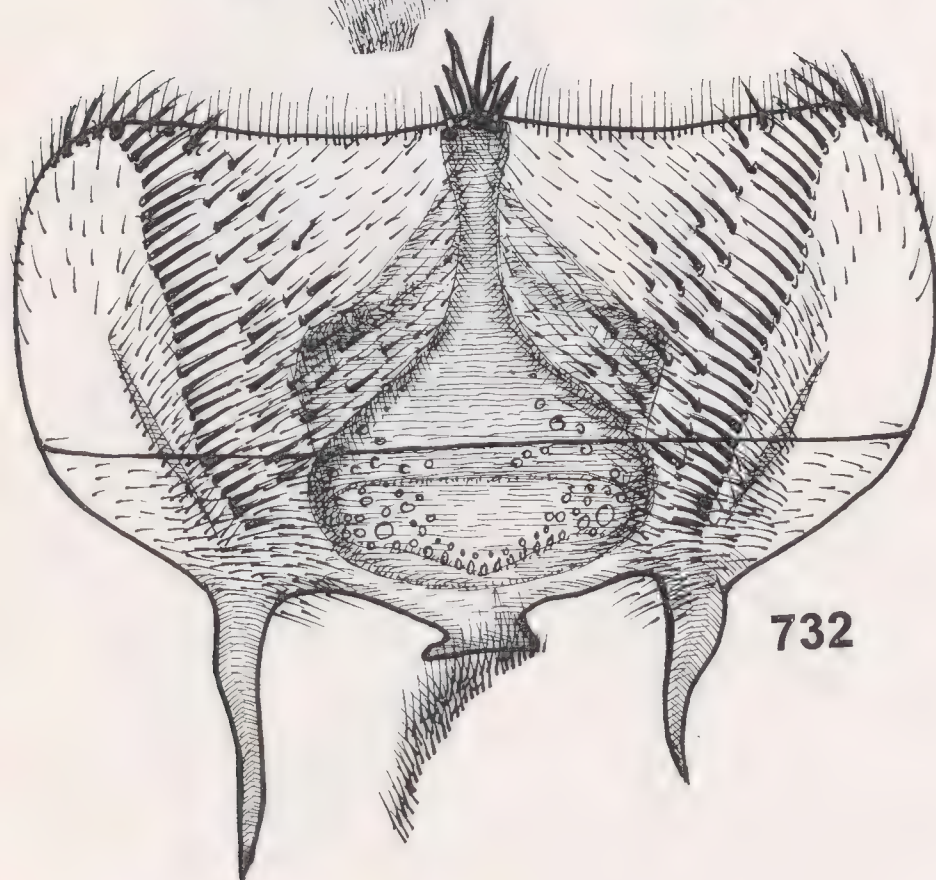
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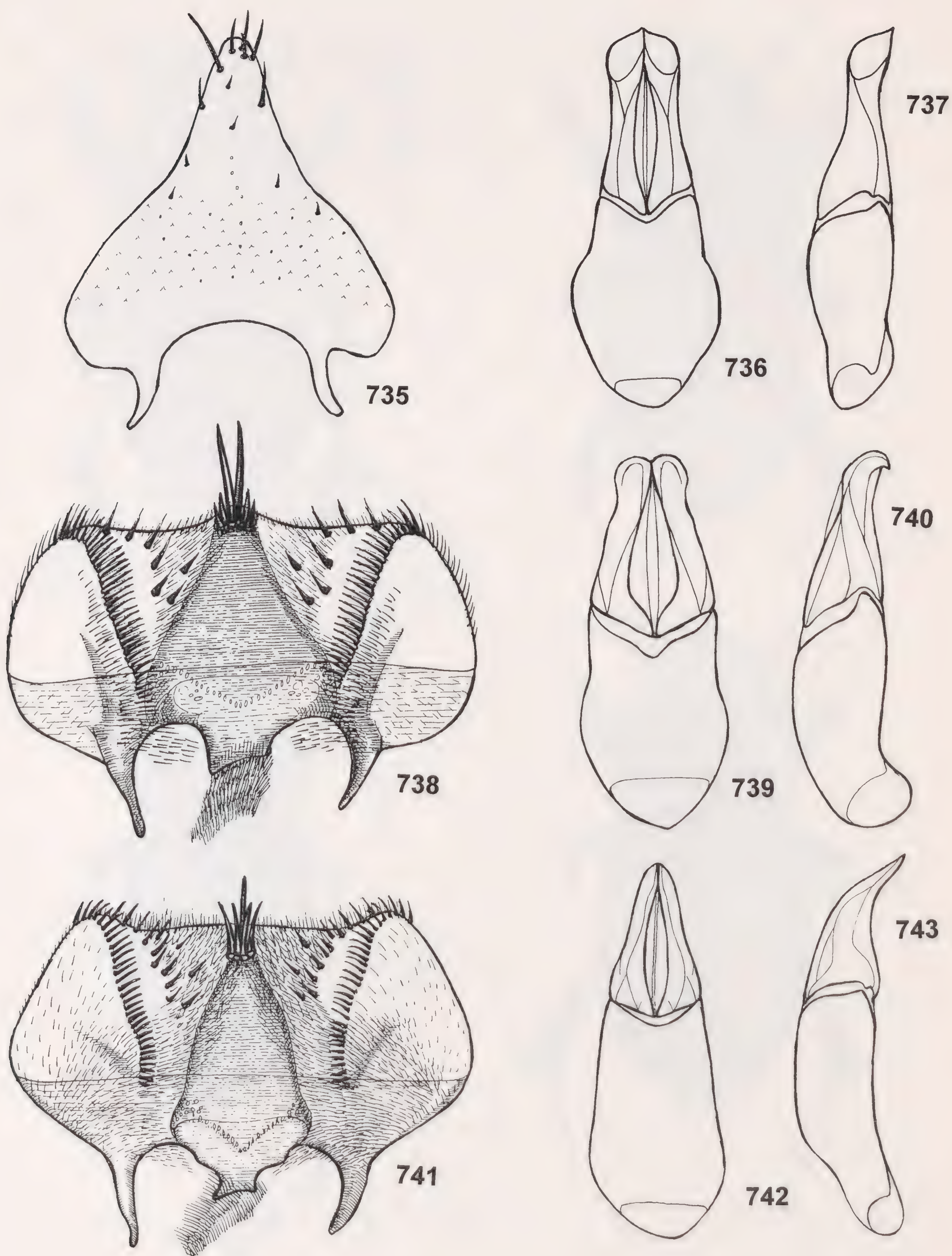


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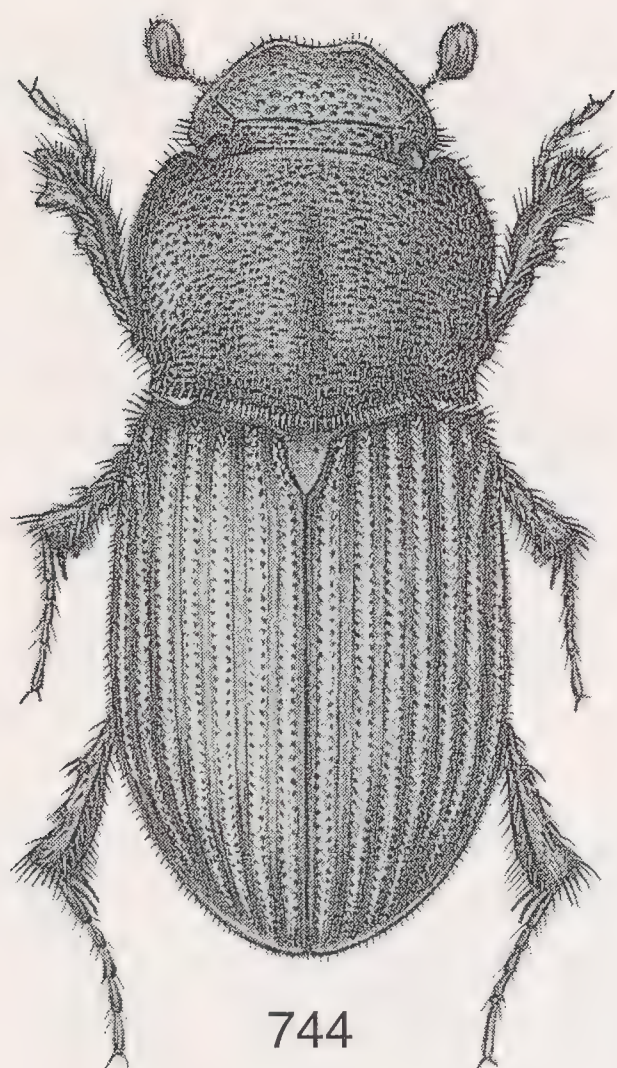


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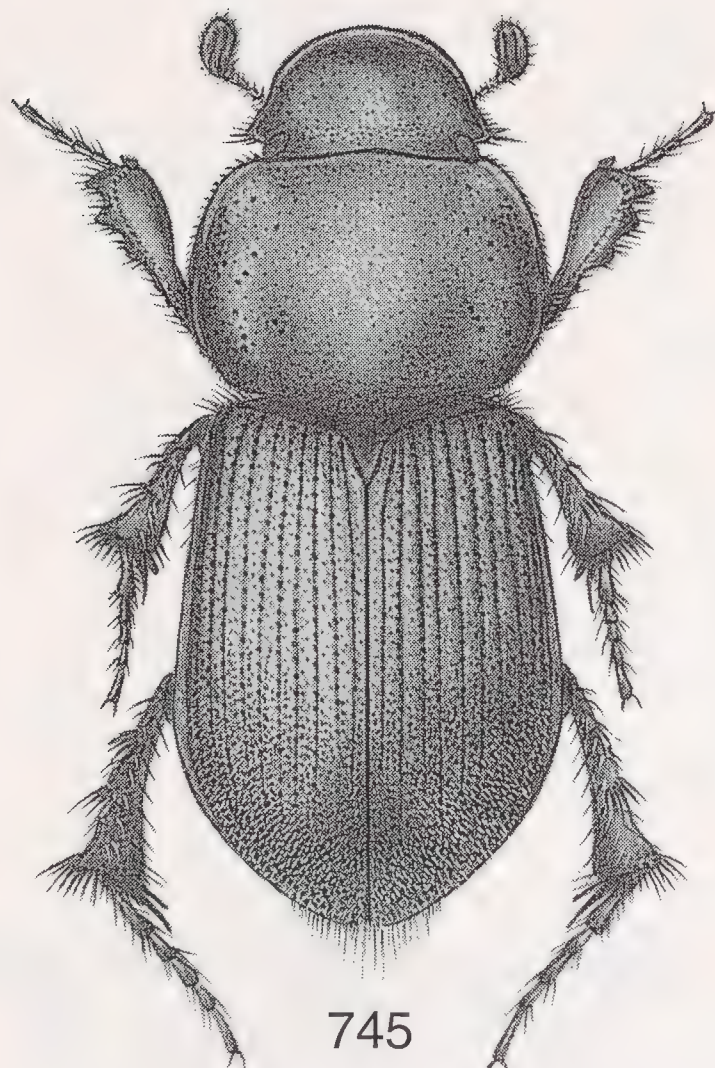
Figs 726-734. Epipharynx and aedeagus, dorsal and lateral view, of: 726-728 - *Osmanius balthasari* (Petrovitz, 1963); 729-731 - *Otophorus haemorrhoidalis* (Linné, 1758); 732-734 - *Oxyaphodius sikkimensis* (Balthasar, 1965)



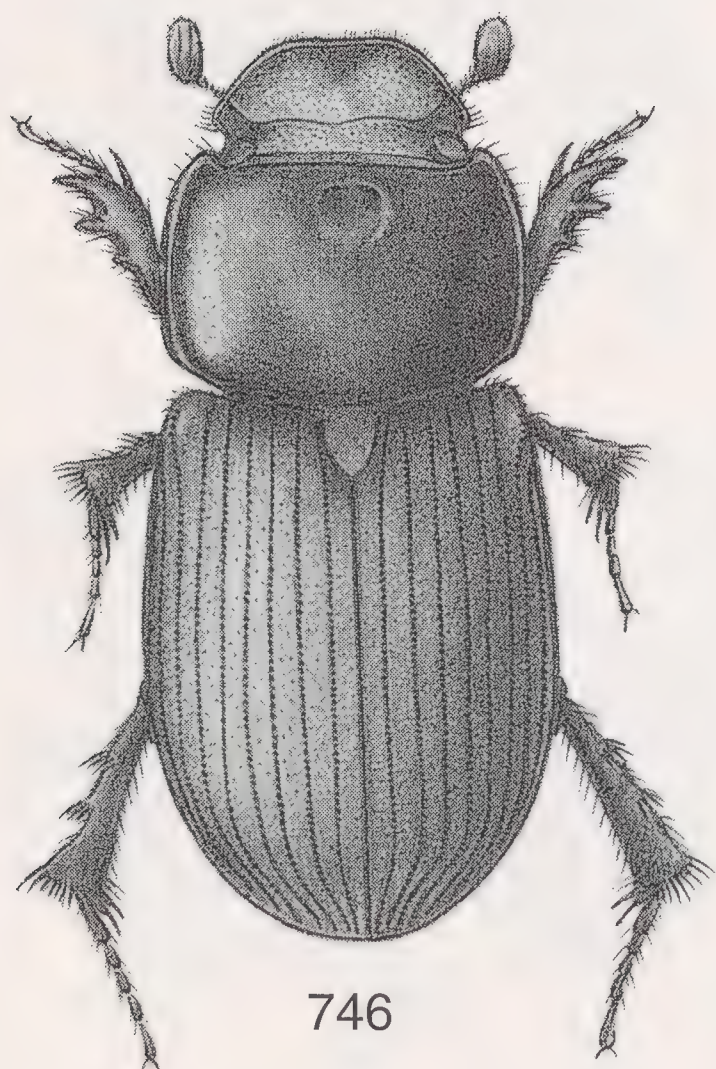
Figs 735-743. Epipharynx and aedeagus, dorsal and lateral view, of: 735-737 - *Oxycorythus morawitzi* Solsky, 1876; 738-740 - *Oxyomus sylvestris* (Scopoli, 1763); 741-743 - *Paracoptochirus singularis* (Harold, 1868)



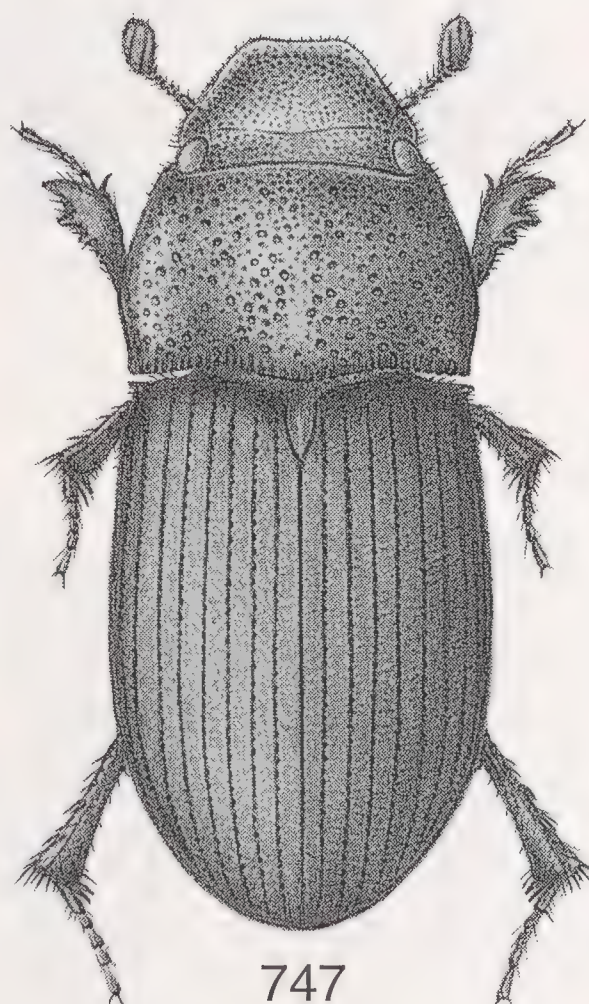
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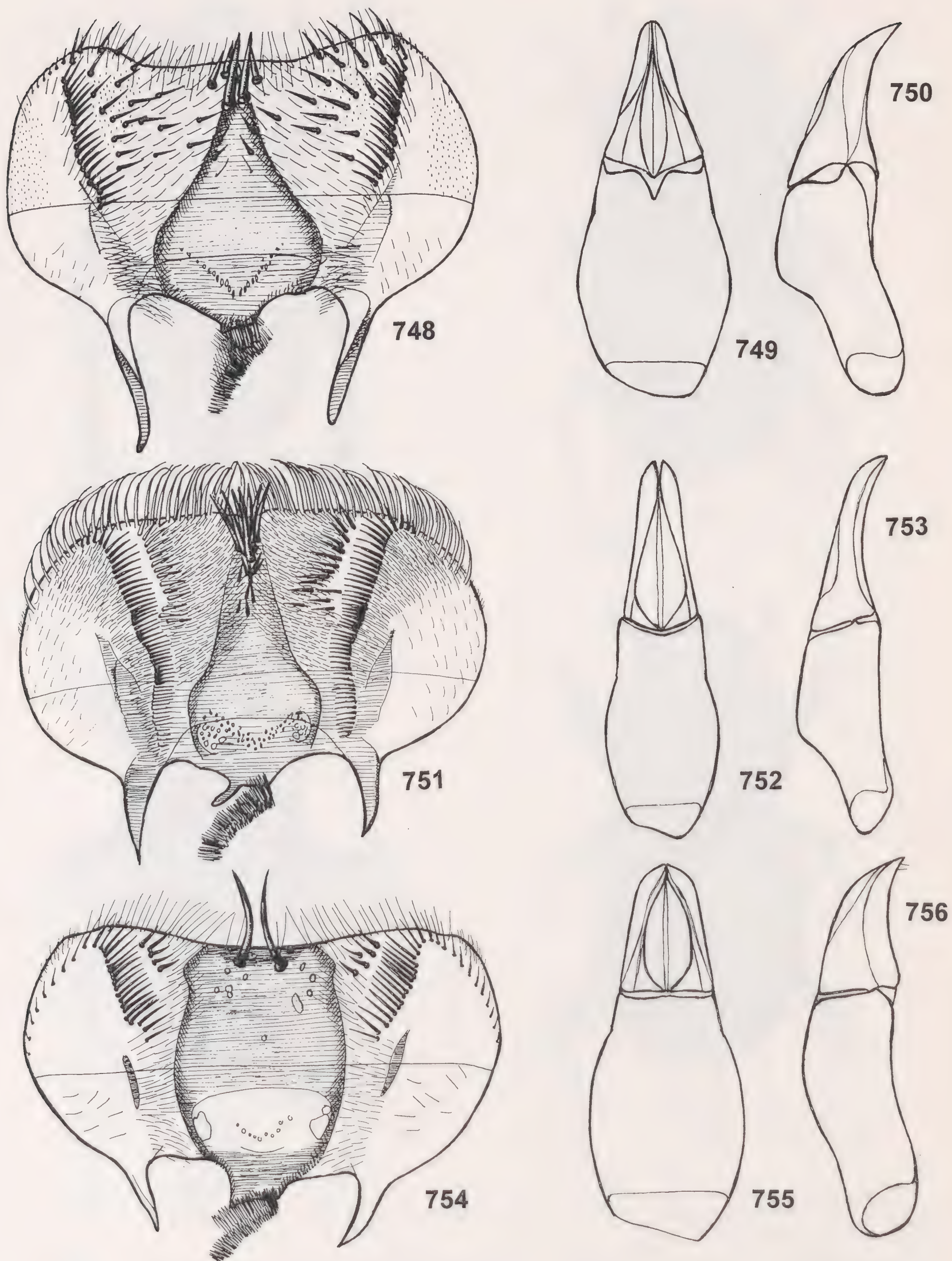
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Fig. 744. *Paracoptochirus singularis* (Harold, 1868) (male, length 8 mm) (Constantinople [European Turkey])

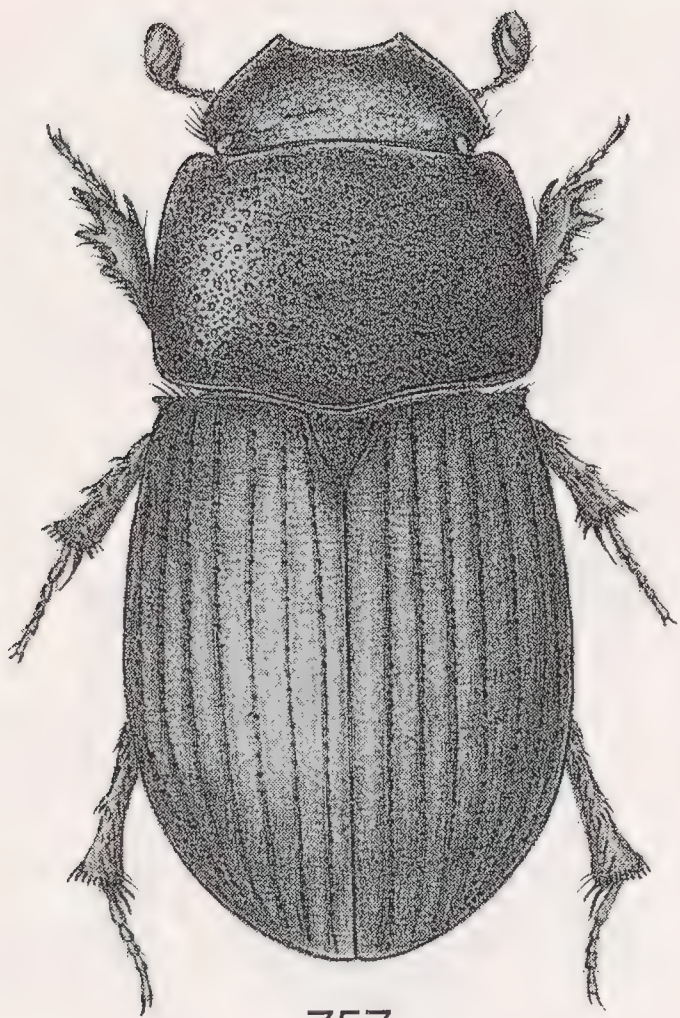
Fig. 745. *Paracrossidius instigator* (Balthasar, 1932) (male, length 7 mm) (China; W. Sichuan, 15 Km South of Kanding)

Fig. 746. *Paradeloparius circumdatus* (Klug, 1855) (male, length 15 mm) (Kenya; Voi, Sagala)

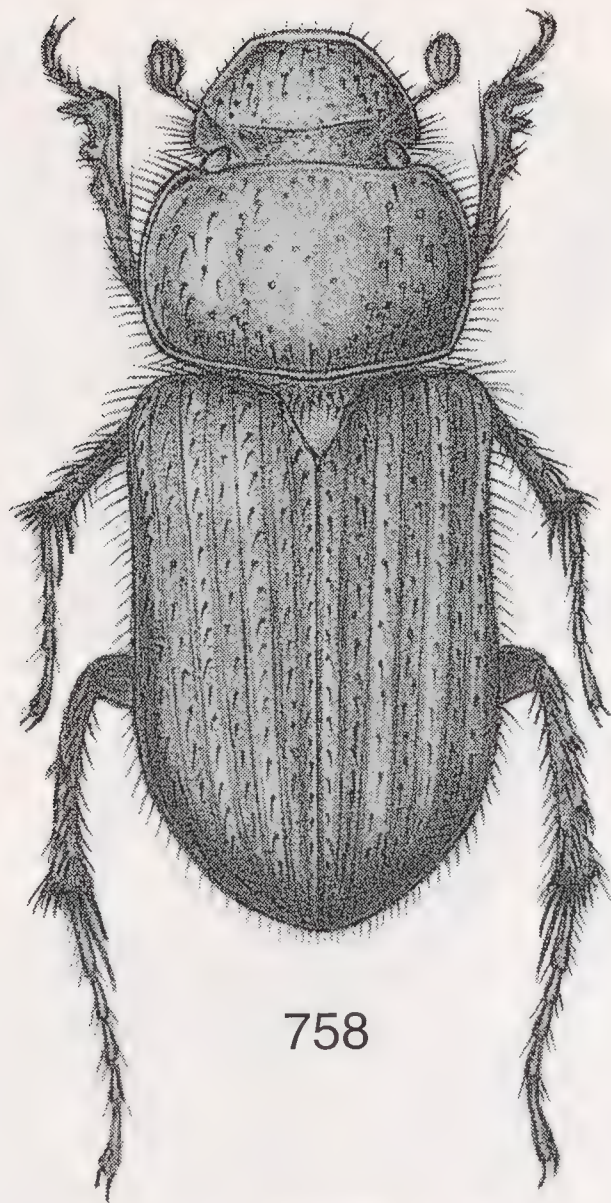
Fig. 747. *Paradidactylia venaloides* (Endrödi, 1960) (male, length 2.5 mm) (Ethiopia; Sakara)



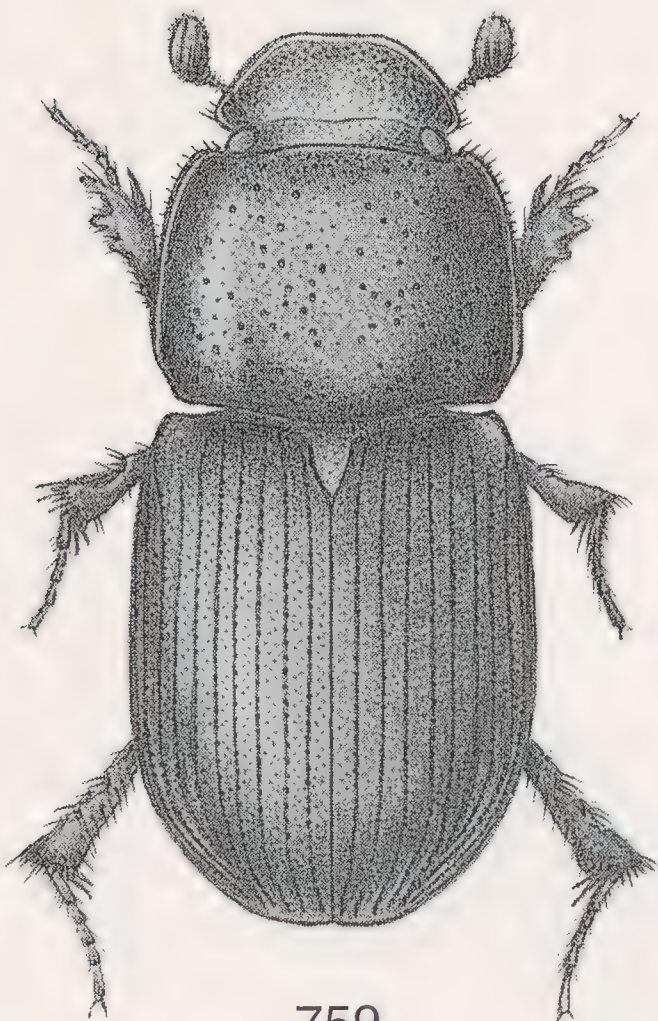
Figs 748-756. Epipharynx and aedeagus, dorsal and lateral view, of: 748-750 - *Paracrossidius instigator* (Balthasar, 1932); 751-753 - *Paradeloparius circumdatus* (Klug, 1855); 754-756. - *Paradidactylia venaloides* (Endrödi, 1960)



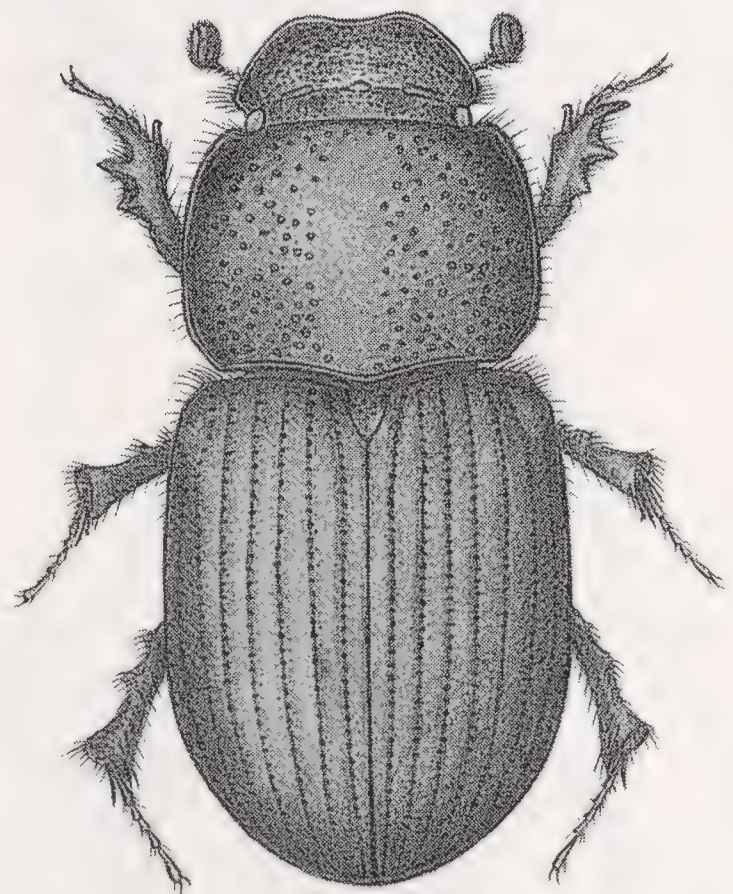
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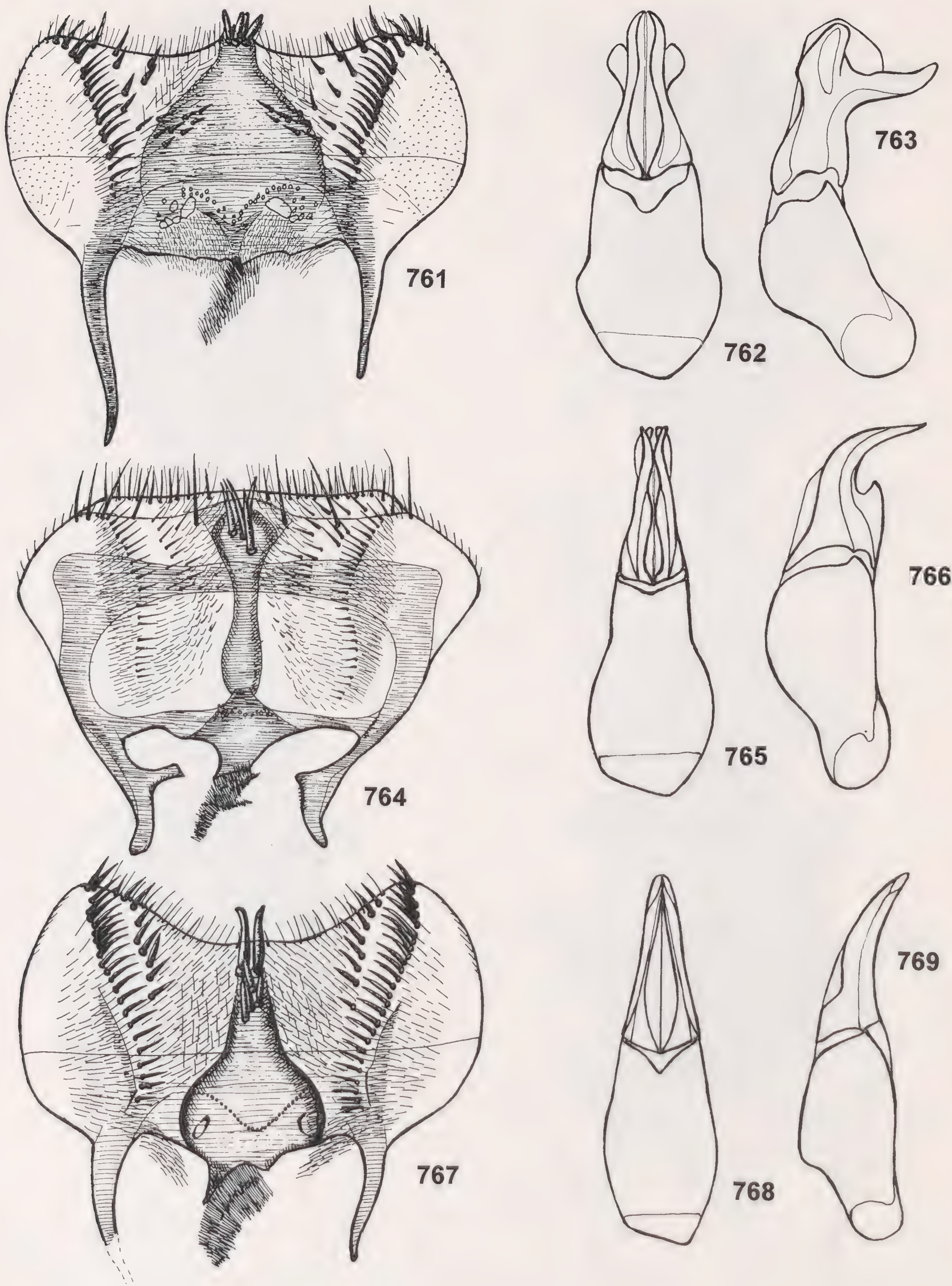
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Fig. 757. *Parammoecius gibbus* (Germar, 1817) (male, length 4 mm) (Italy; Trentino-Alto Adige, Bolzano, Campo Tures)

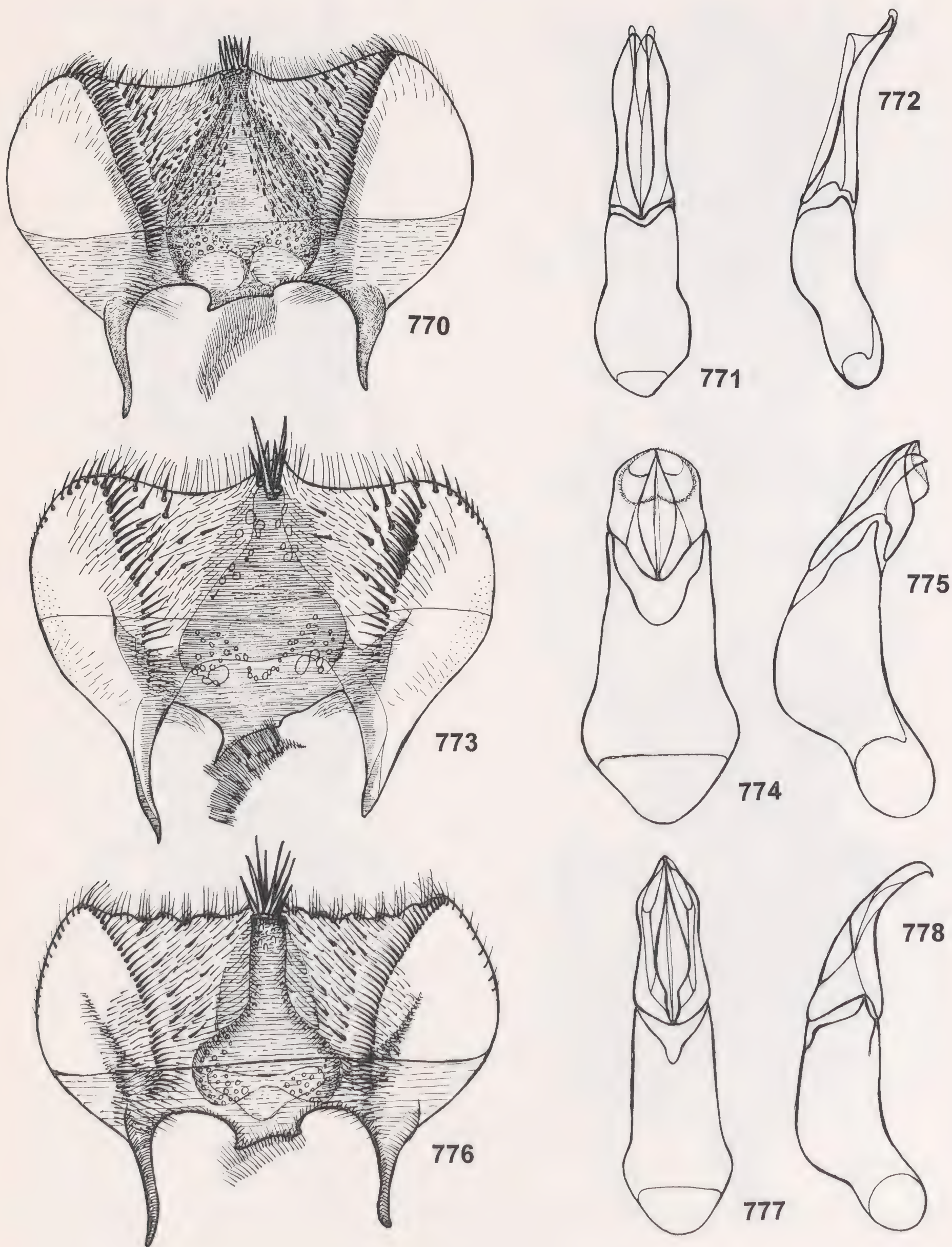
Fig. 758. *Paranimbus peruanus* (Erichson, 1834) (male, length 8 mm) (Peru; Cuzco, Chincheros)

Fig. 759. *Paulianellus maderi* (Balthasar, 1938) (male, length 6 mm) (Central Nepal, Rasuwa distr., Bagmati)

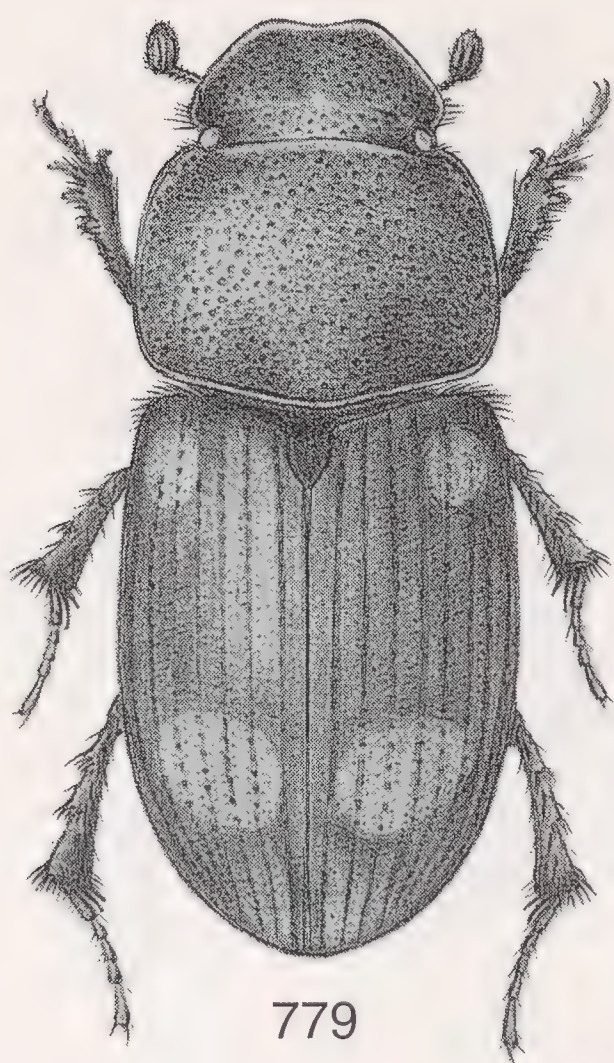
Fig. 760. *Phaeaphodius rectus* (Motschulsky, 1866) (male, length 5 mm) (Russia; Siberia, Irkutsk)



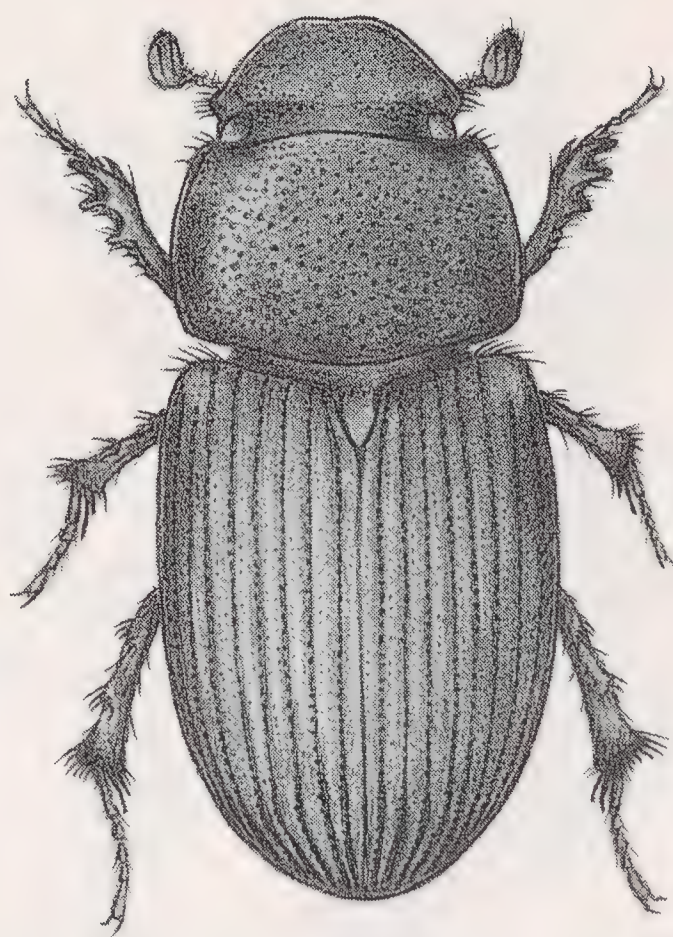
Figs 761-769. Epipharynx and aedeagus, dorsal and lateral view, of: 761-763 - *Parammoecius gibbus* (Germar, 1817); 764-766 - *Paranimbus peruanus* (Erichson, 1834); 767-769 - *Paulianellus maderi* (Balthasar, 1938)



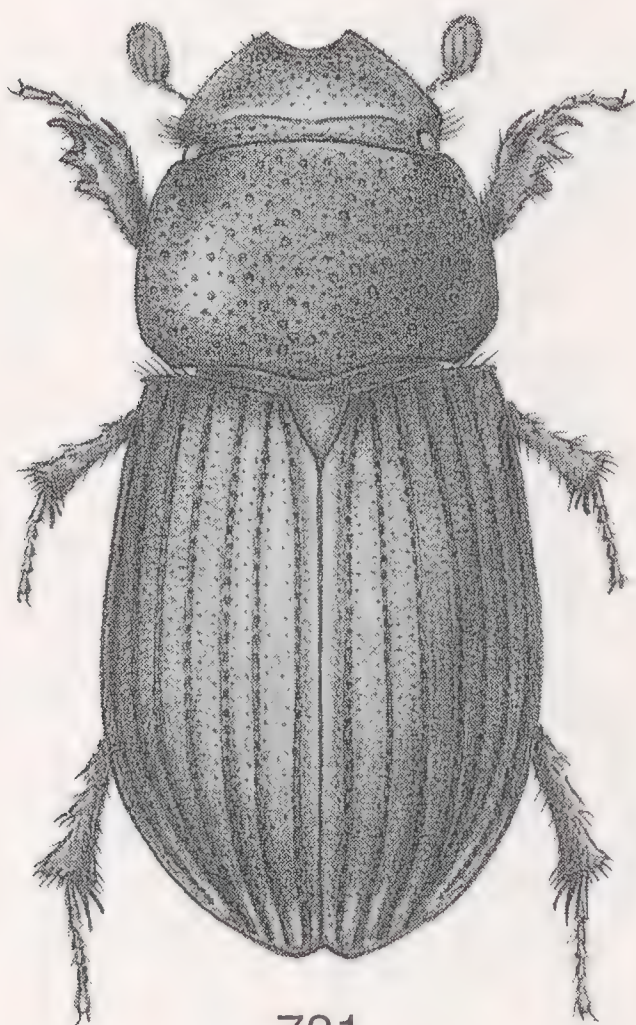
Figs 770-778. Epipharynx and aedeagus, dorsal and lateral view, of: 770-772 - *Phaeaphodius rectus* (Motschulsky, 1866); 773-775 - *Phalacrothothus quadrimaculatus* (Linné, 1761); 776-778 - *Pharaphodius marginellus* (Fabricius, 1781)



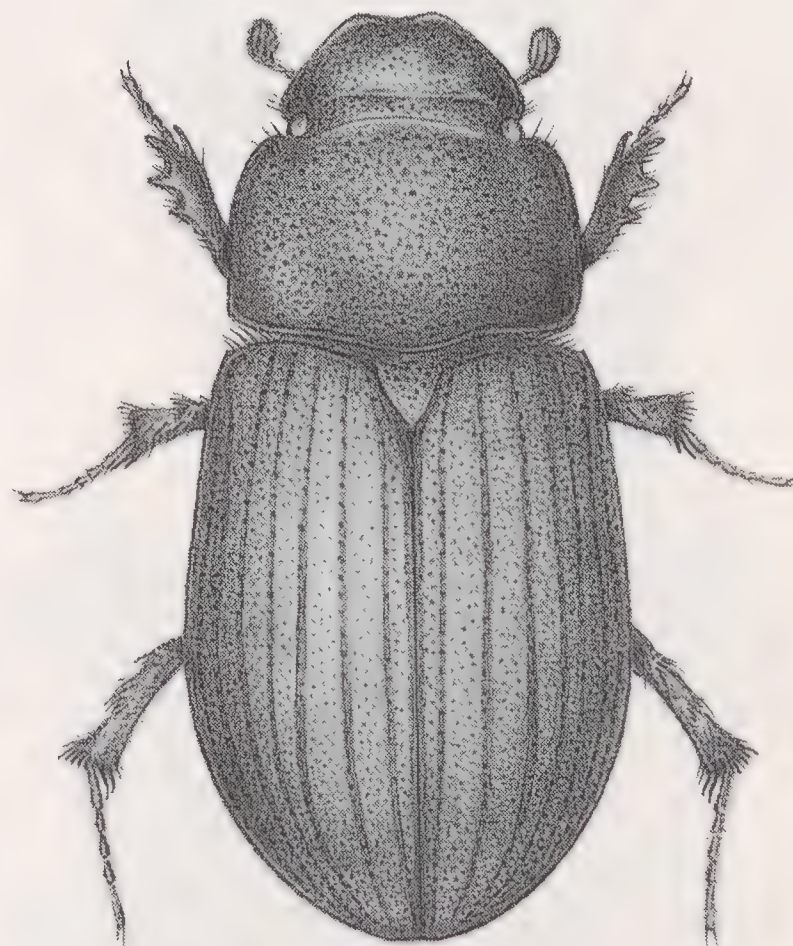
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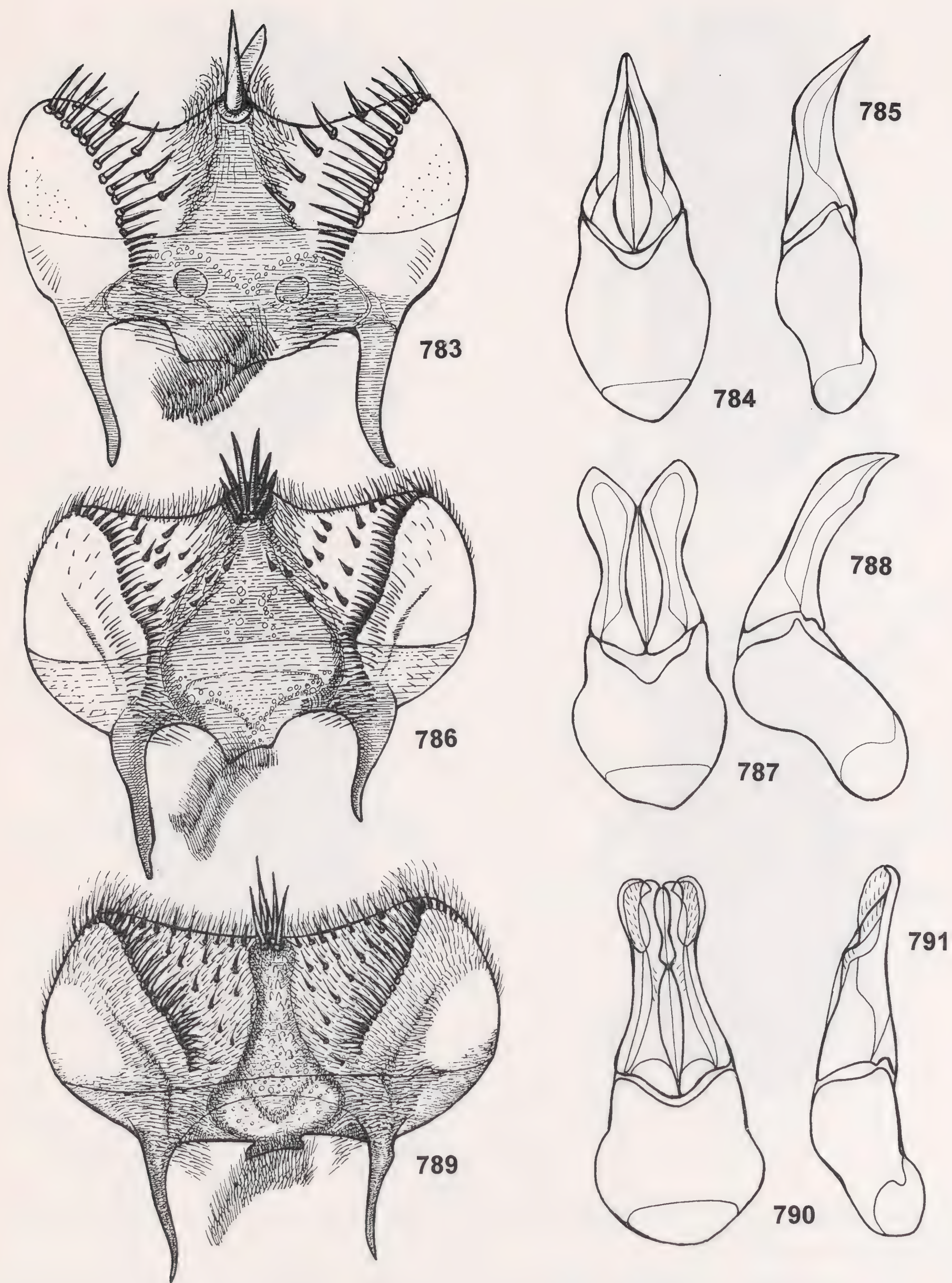
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Fig. 779. *Phalacronothus quadrimaculatus* (Linné, 1761) (male, length 3.5 mm) (Italy; Puglia, Brindisi, Mesagne)

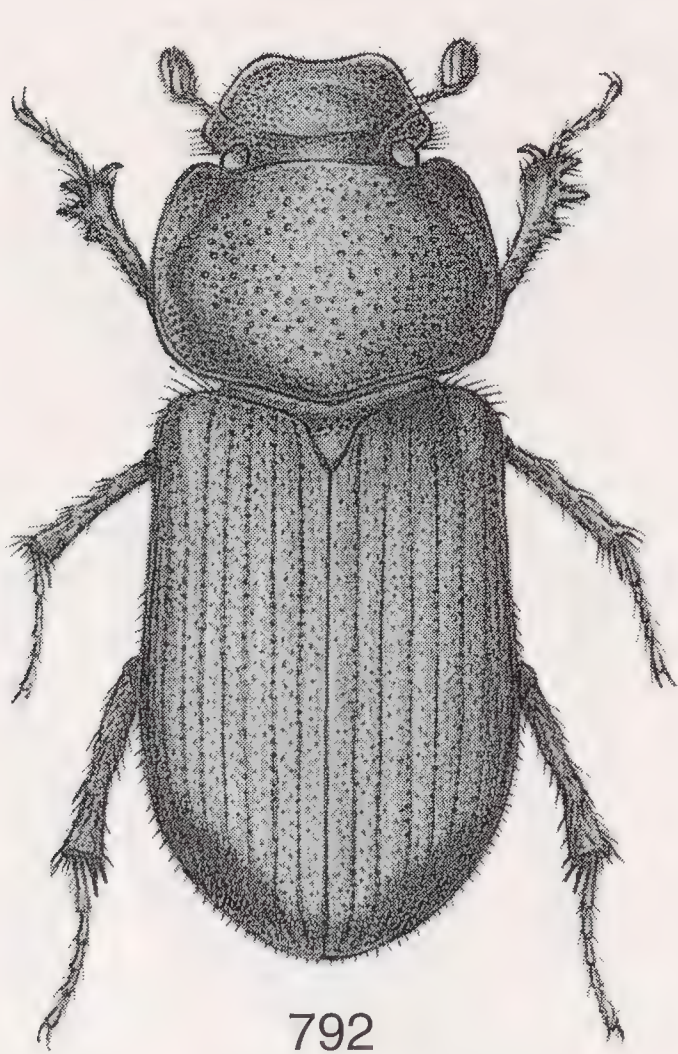
Fig. 780. *Pharaphodius marginellus* (Fabricius, 1781) (male, length 6 mm) (India; Tamil Nadu St., Madras env.)

Fig. 781. *Plagiogonus putridus* (Geoffroy in Fourcroy, 1785) (male, length 3 mm) (Italy; Piemonte, Cuneo, Demonte)

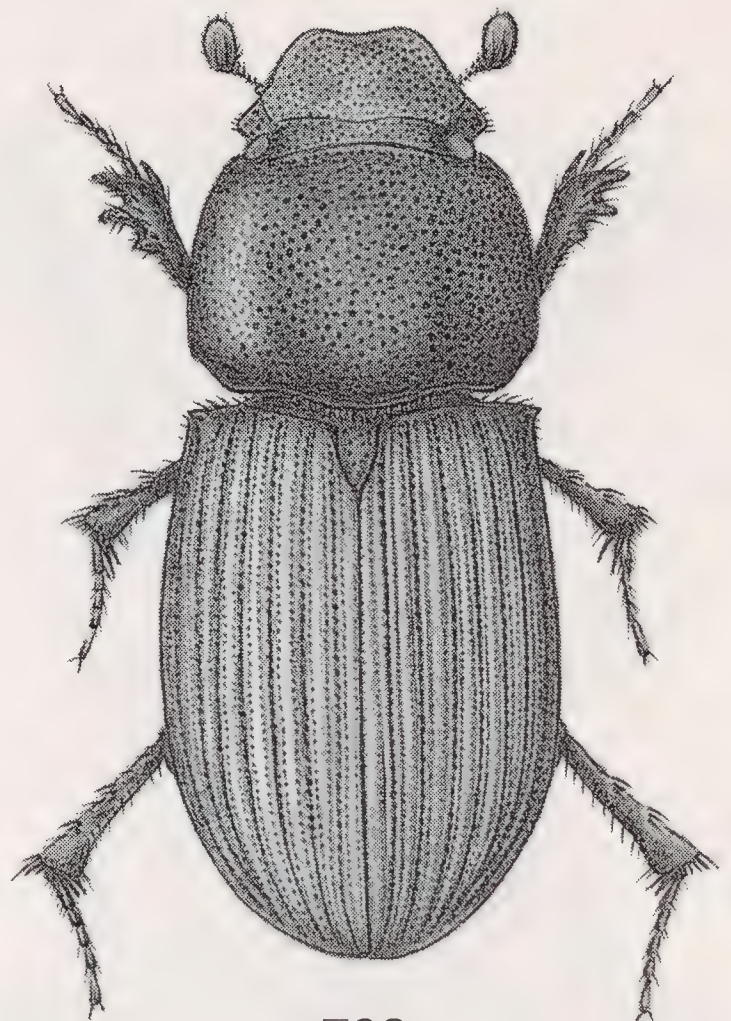
Fig. 782. *Planolinus uliginosus* (Hardy, 1847) (male, length 4 mm) (Italy; Piemonte, Cuneo, Entracque)



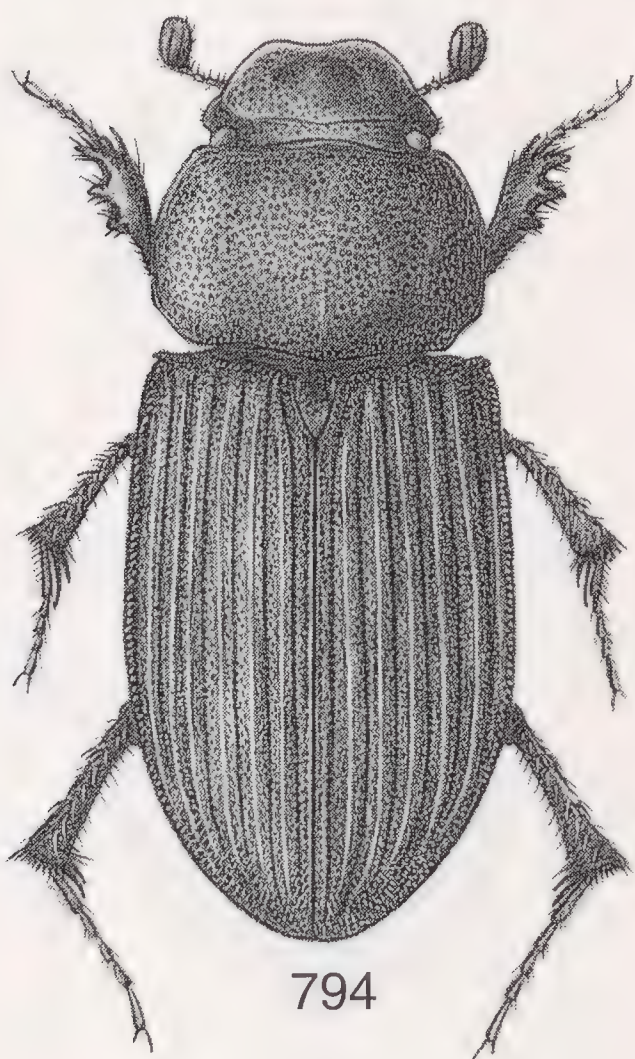
Figs 783-791. Epipharynx and aedeagus, dorsal and lateral view, of: 783-785 - *Plagiogonus putridus* (Geoffroy in Fourcroy, 1785); 786-788 - *Planolinus uliginosus* (Hardy, 1847); 789-791 - *Platyderides arrowi* (A. Schmidt, 1910)



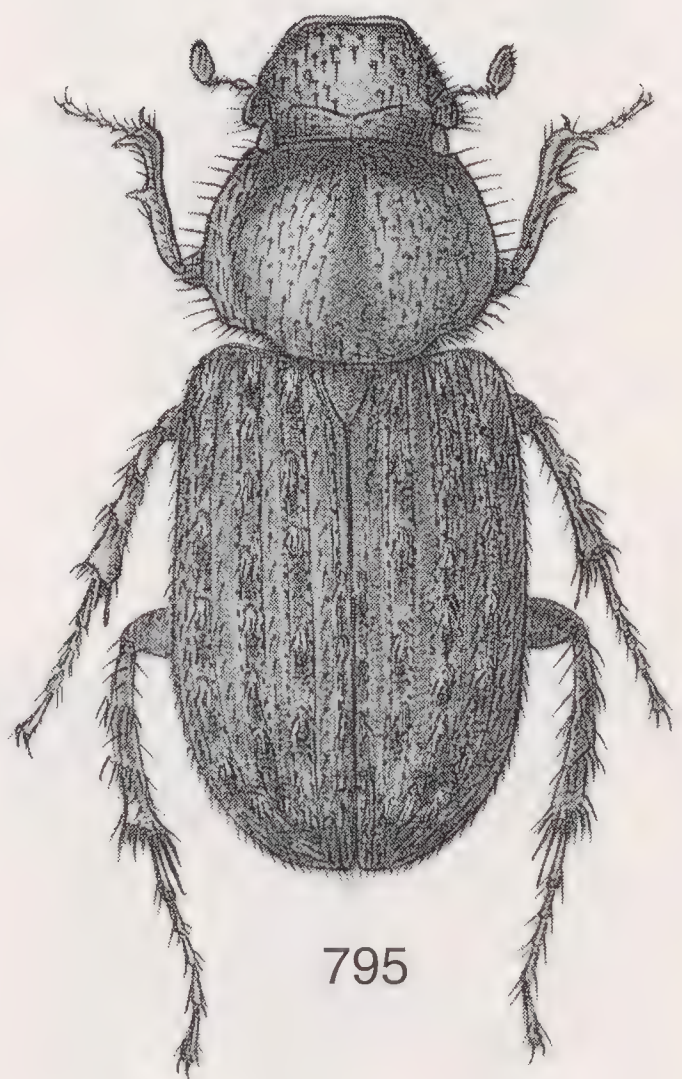
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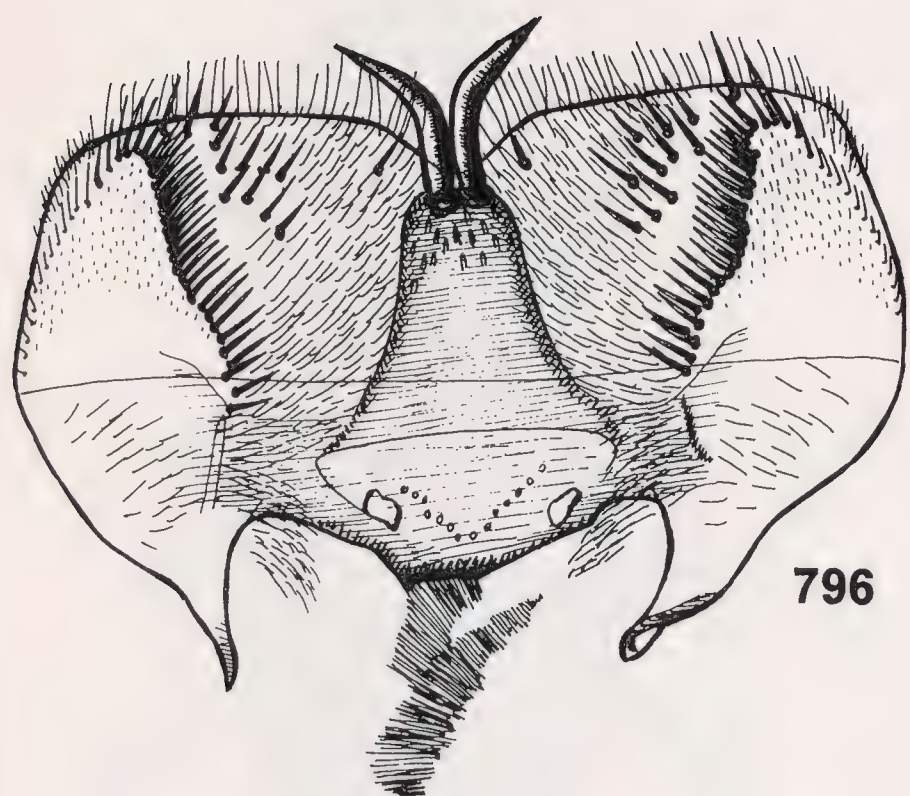
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Fig. 792. *Platyderides arrowi* (A. Schmidt, 1910) (male, length 10 mm) (China; Da-laen-saen)

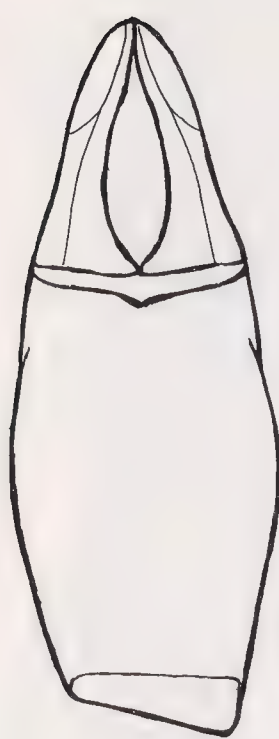
Fig. 793. *Pleuraphodius mutilus* (A. Schmidt, 1911) (male, length 4 mm) (South Africa; Cape Prov., Isendengo Forest, Amatole)

Fig. 794. *Podotenoides jeannelianus* (Balthasar, 1945) (male, length 6 mm) (Kenya; Aberdare Mts.)

Fig. 795. *Podotenus insignior* (Blackburn, 1904) (male, length 5 mm) (West Australia; Swan River)



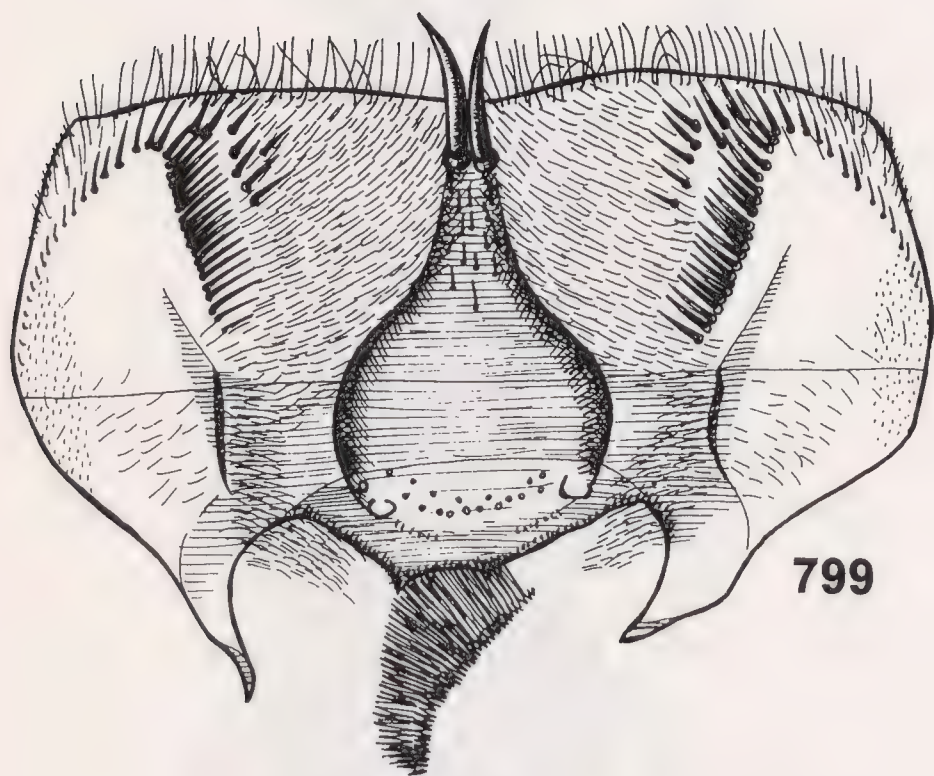
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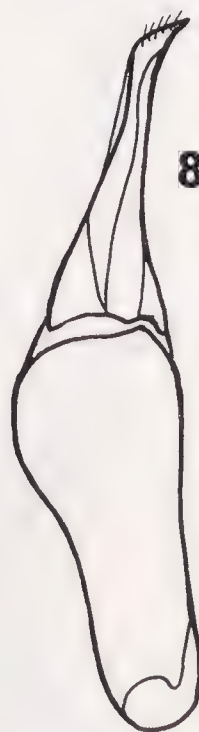
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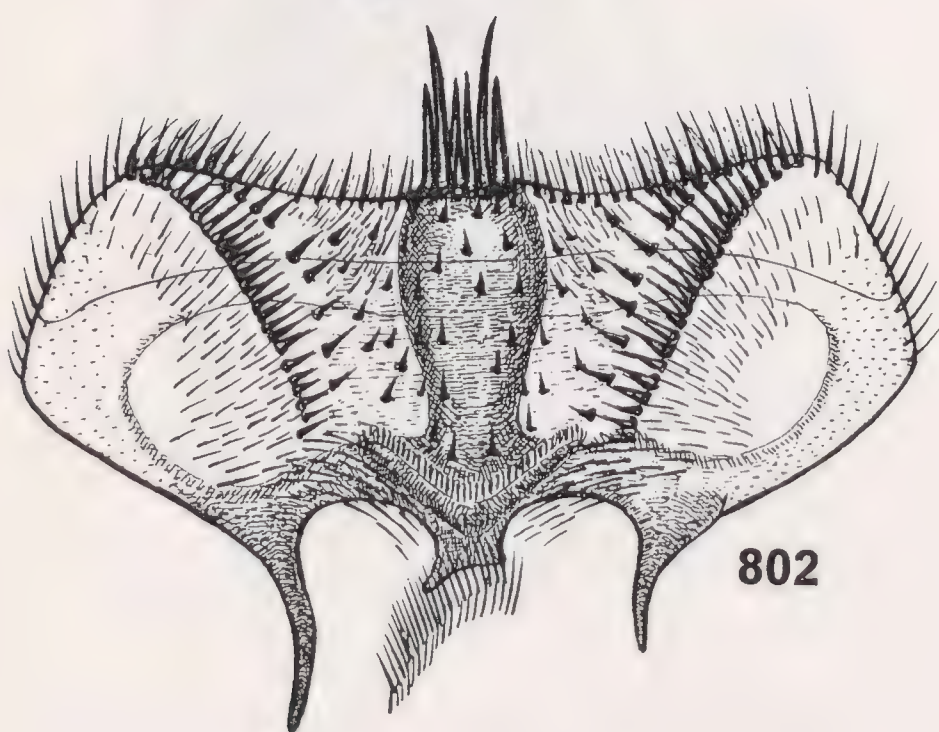
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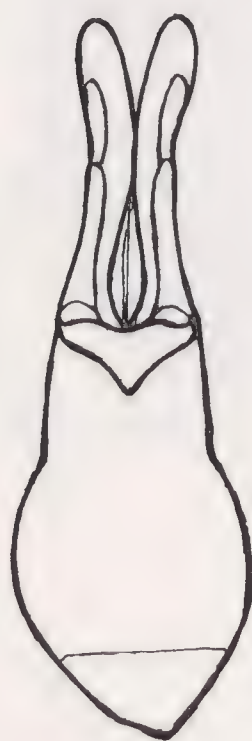
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Figs 796-804. Epipharynx and aedeagus, dorsal and lateral view, of: 796-798 - *Pleuraphodius mutilus* (A. Schmidt, 1911); 799-801 - *Podotenoides jeannelianus* (Balthasar, 1945); 802-804 - *Podotenus insignior* (Blackburn, 1904)

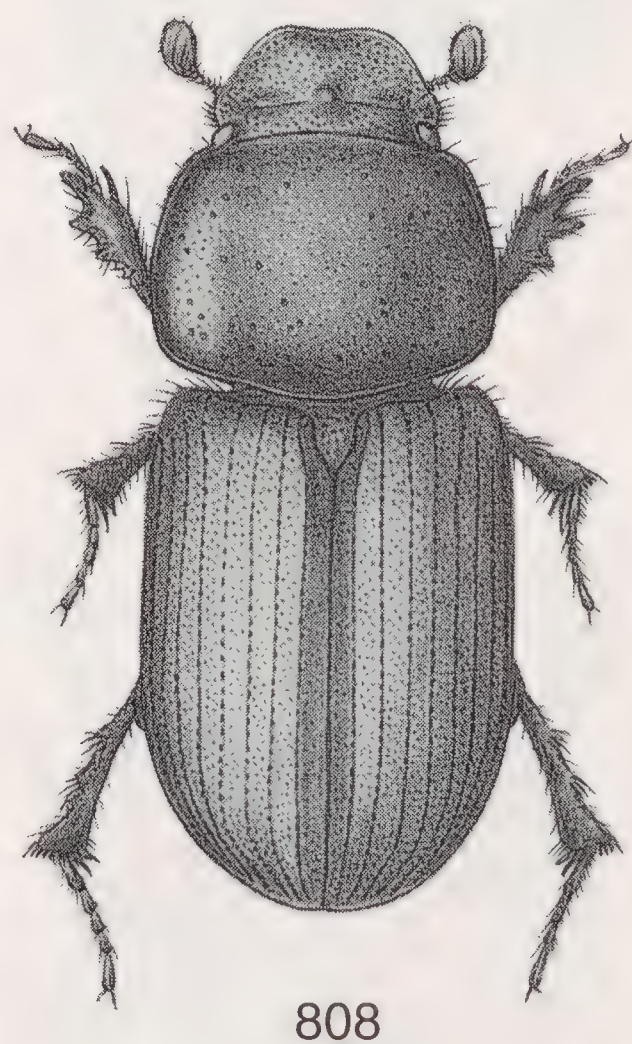
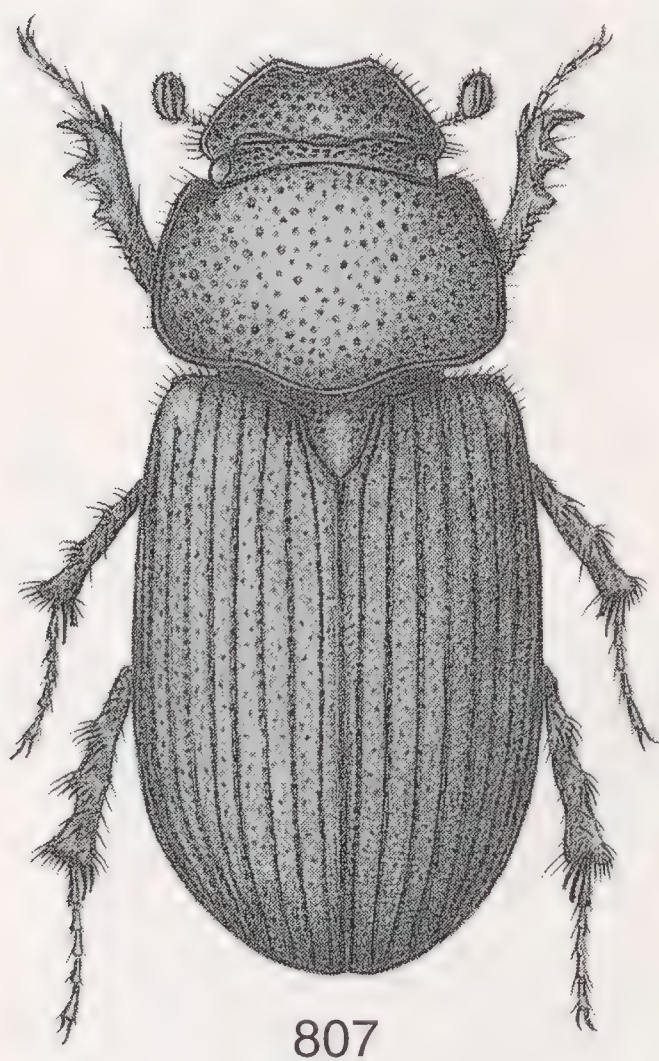
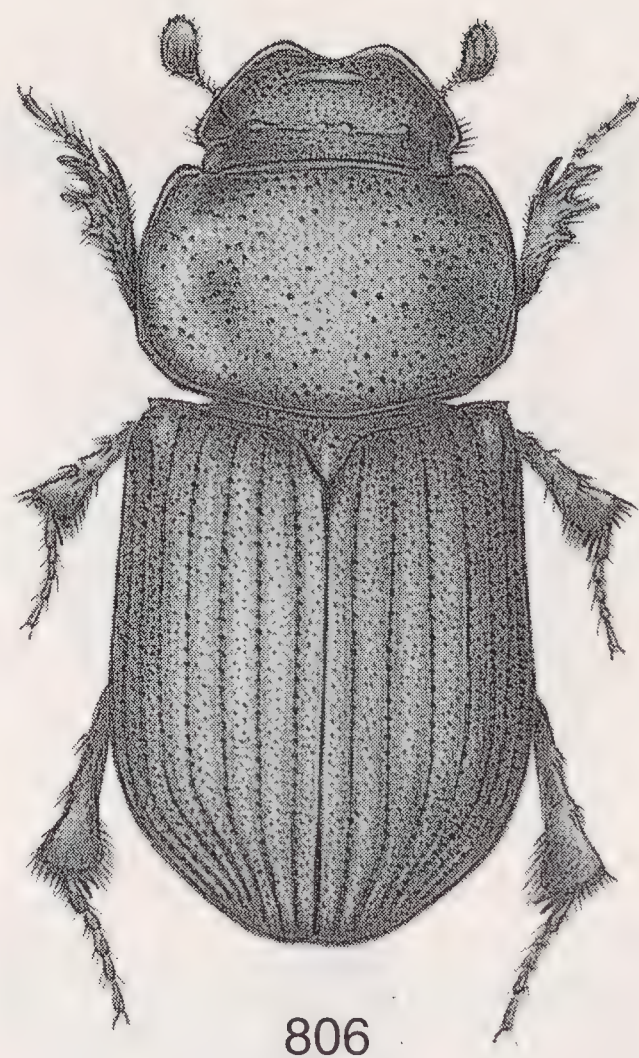
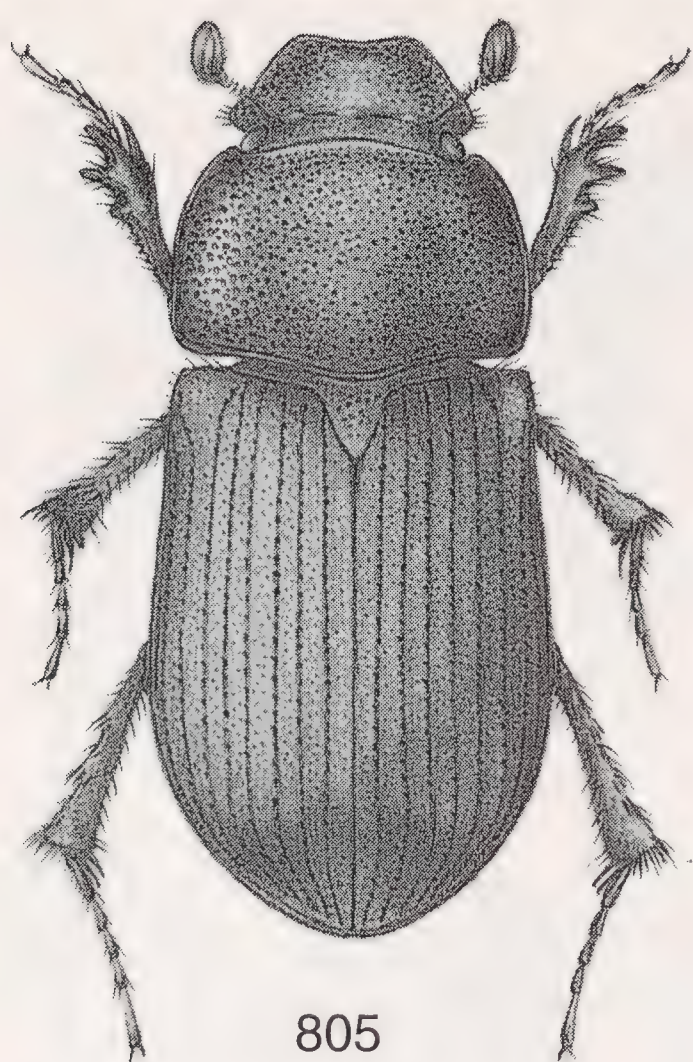
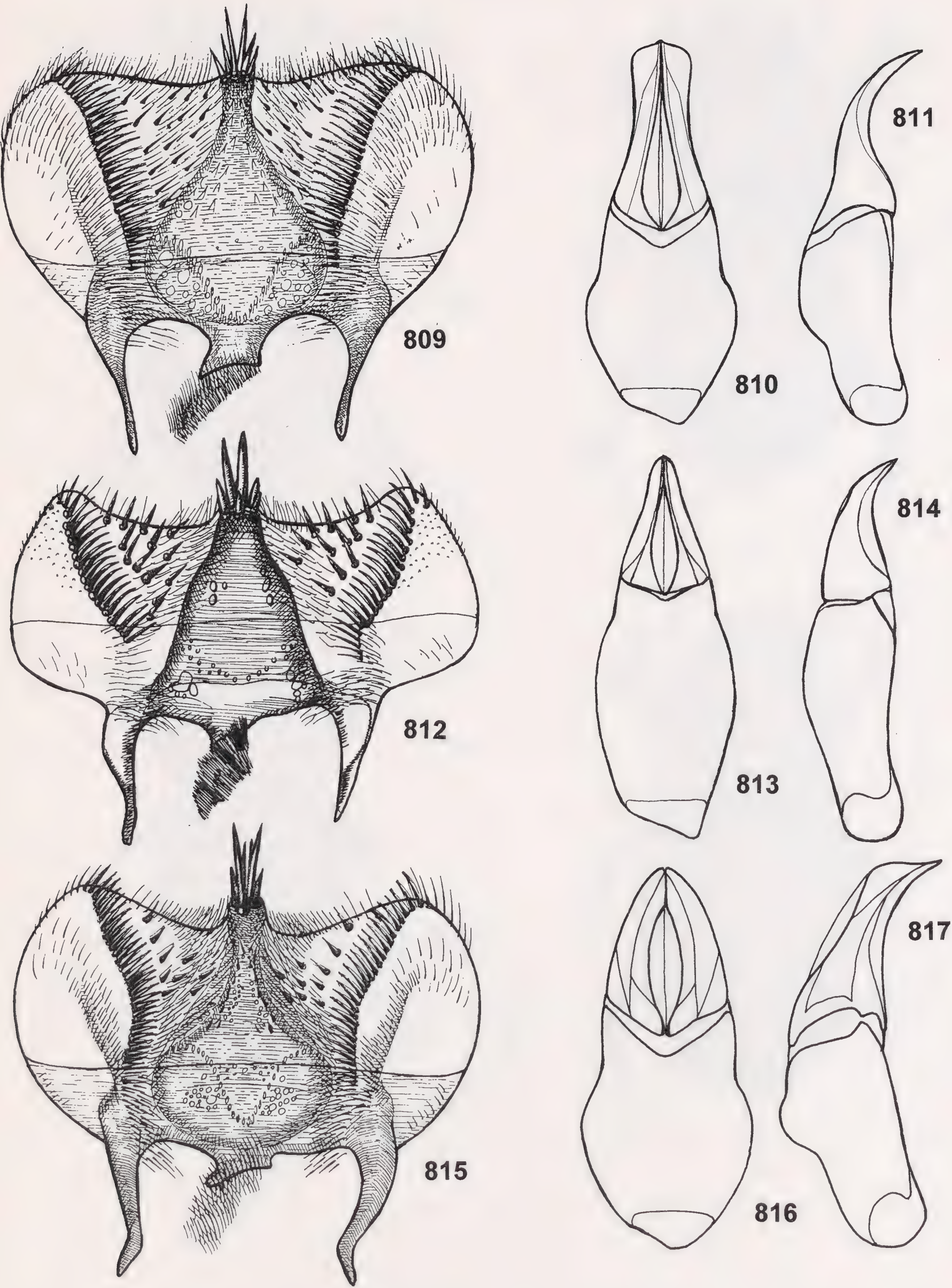


Fig. 805. *Pseudacrossus grombczewskyi* (D. Koshantschikov, 1891) (male, length 7 mm) (Kazakhstan; Ala Tau, Dzungarkij)

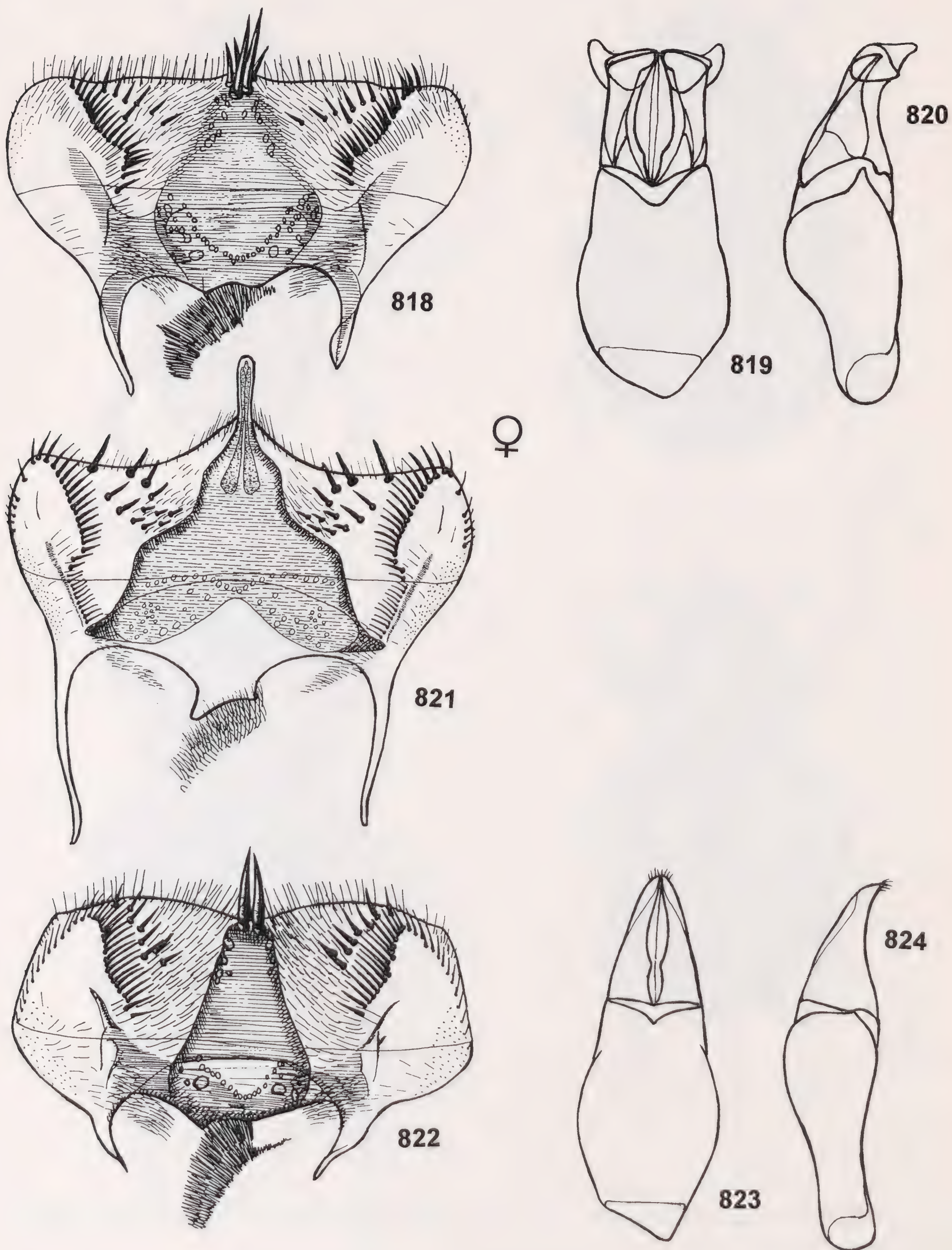
Fig. 806. *Pseudagolinus sinuatipes* (Bordat, 1994) (male, length 4 mm) (South Africa; S.W. Cape of Good Hope Nat. Res.)

Fig. 807. *Pseudagolius coloradensis* (Horn, 1870) (male, length 7 mm) (USA; Arizona, Portal)

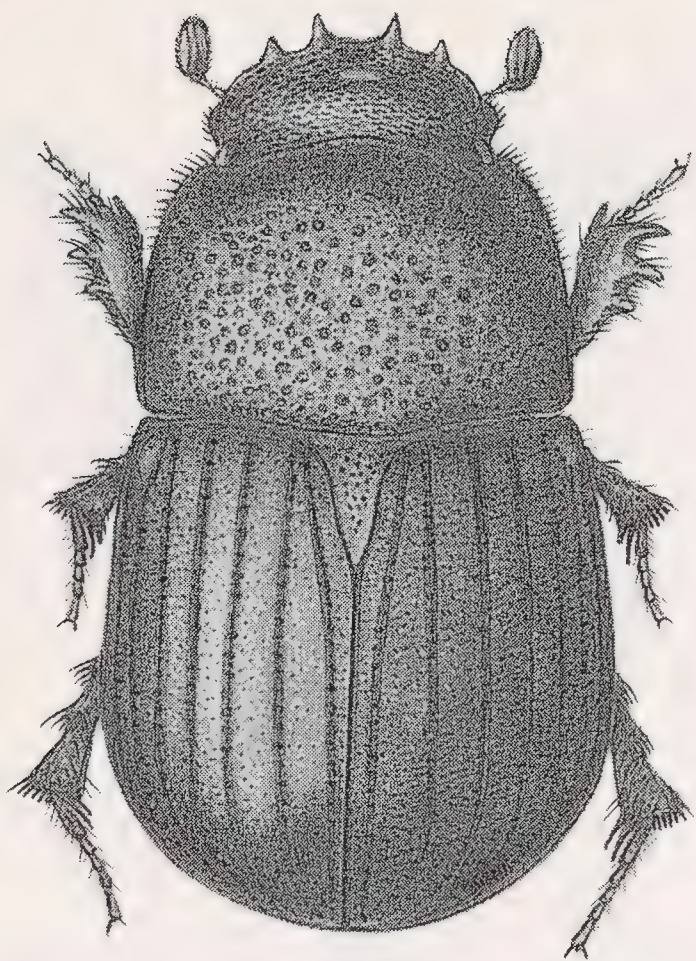
Fig. 808. *Pseudesymus lucidus* (Klug, 1855) (male, length 5 mm) (Tunisia; Tamerza)



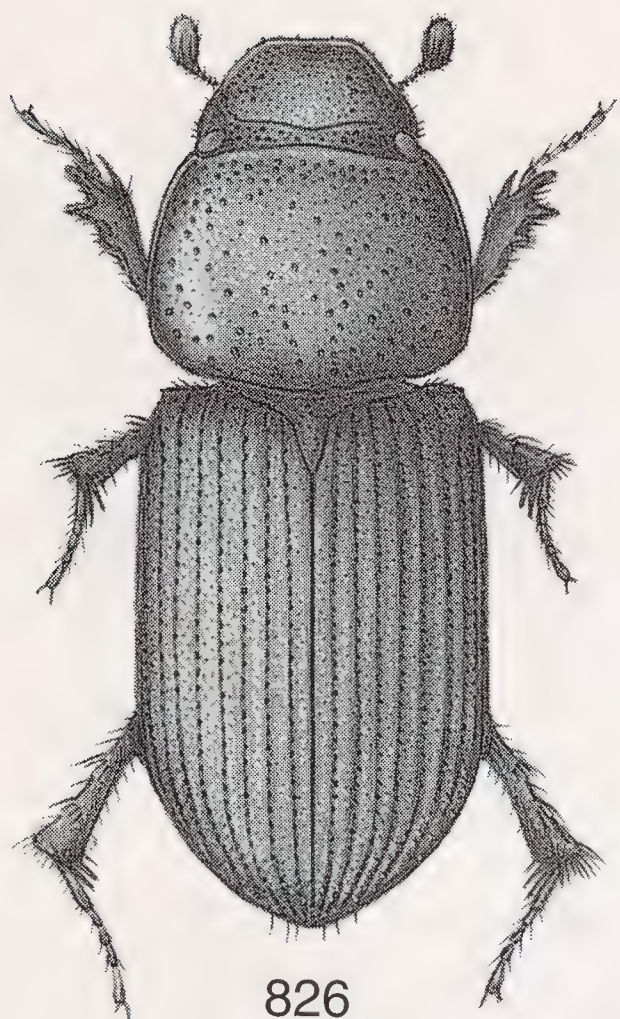
Figs 809-817. Epipharynx and aedeagus, dorsal and lateral view, of: 809-811 - *Pseudacrossus grombczewskyi* (D. Koshantschikov, 1891); 812-814 - *Pseudagoliinus sinuatipes* (Bordat, 1994); 815-817 - *Pseudagolius coloradensis* (Horn, 1870)



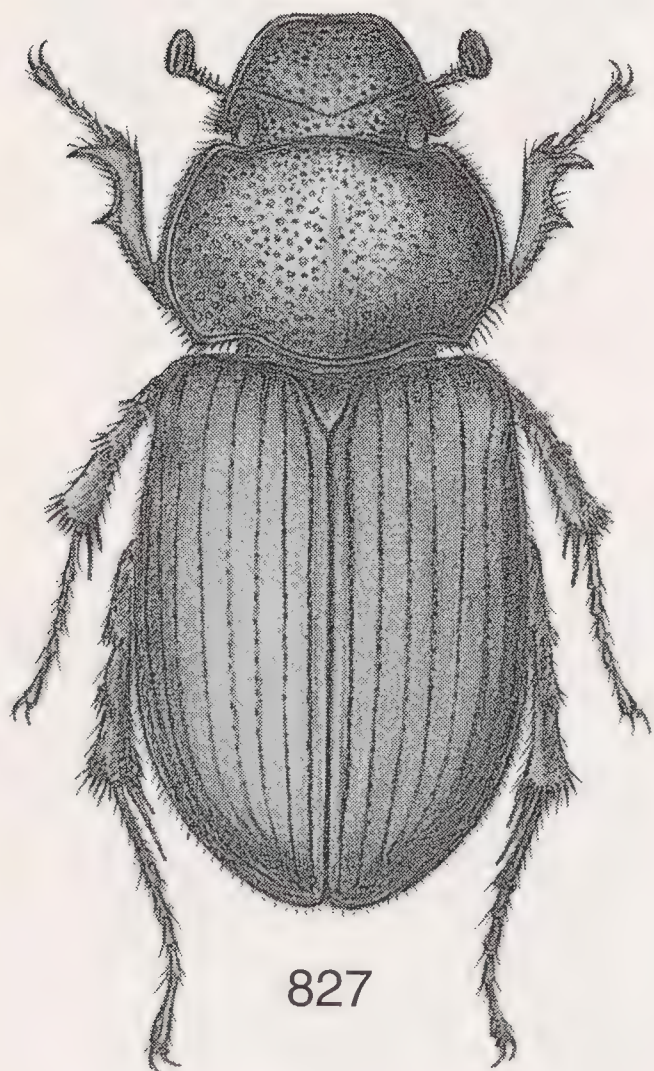
Figs 818-824. Epipharynx and aedeagus, dorsal and lateral view, of: 818-820 - *Pseudesymus lucidus* (Klug, 1845); 821 - *Pseudoahermodontus benesi* G. & M. Dellacasa, 1998; 822-824 - *Pseudopharaphodius anthrax* (Gerstaecker, 1871)



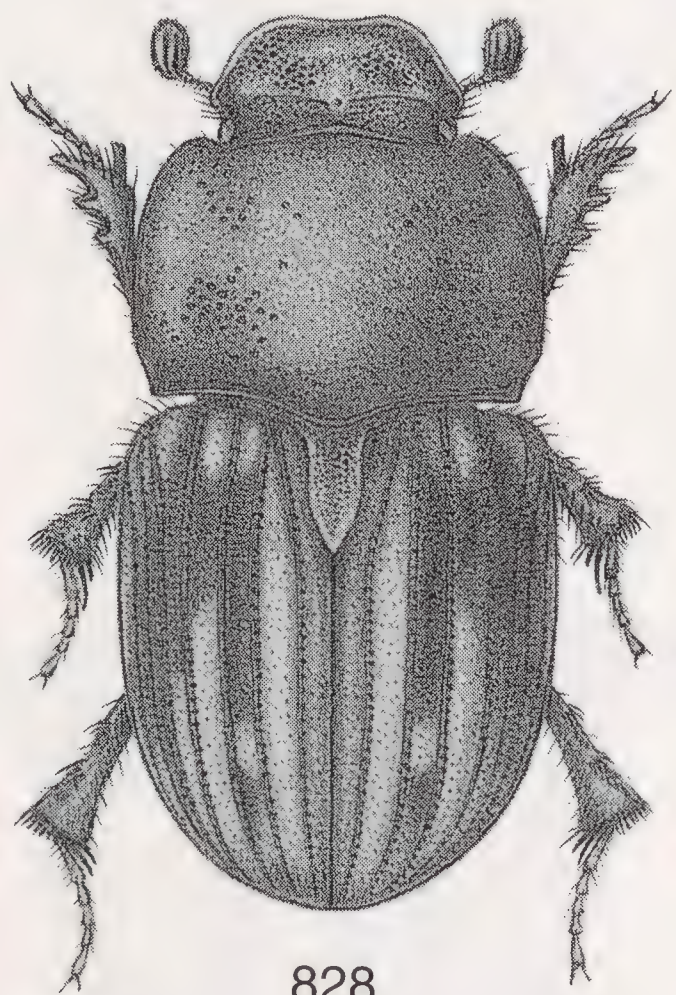
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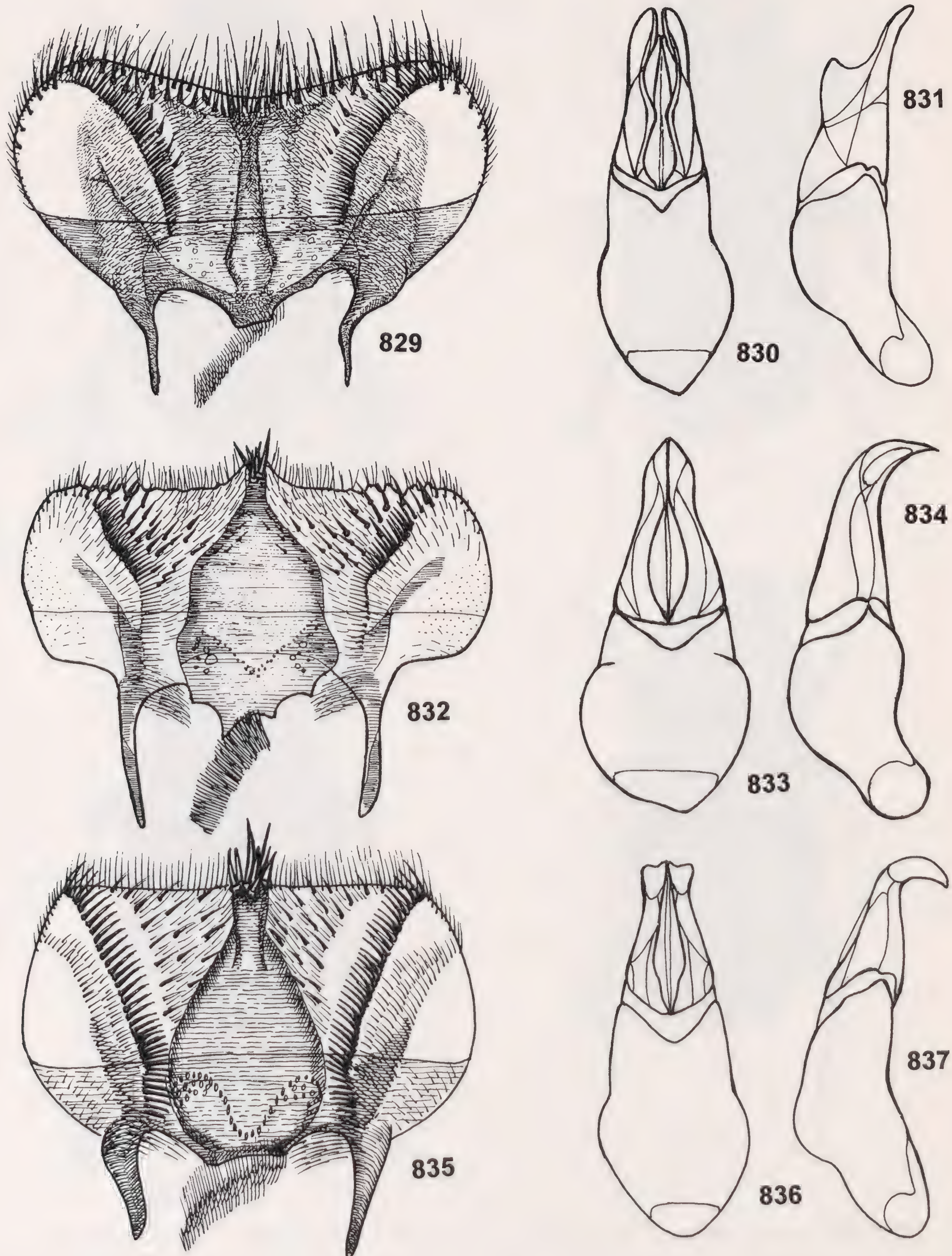
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Fig. 825. *Pseudoahermodontus benesi* G. & M. Dellacasa, 1998 (female, length 5 mm) (China; South Gansu, Wenxian env.)

Fig. 826. *Pseudopharaphodius anthrax* (Gerstaecker, 1871) (male, length 3 mm) (South Africa; Natal, Cathedral Peak)

Fig. 827. *Pseudopodotenus fulviventris* (Fairmaire, 1860) (male, length 10 mm) (Chile; Valdivia)

Fig. 828. *Pseudoteuchestes shirparakensis* (Petrovitz, 1955) (male, length 6 mm) (Afghanistan; Bamyan Prov., Shibar Pass)



Figs 829-837. Epipharynx and aedeagus, dorsal and lateral view, of: 829-831 - *Pseudopodotenus fulviventris* (Fairmaire, 1860); 832-834 - *Pseudoteuchestes shirparakensis* (Petrovitz, 1955); 835-837 - *Pubinus tomentosus* (O. F. Müller, 1776)

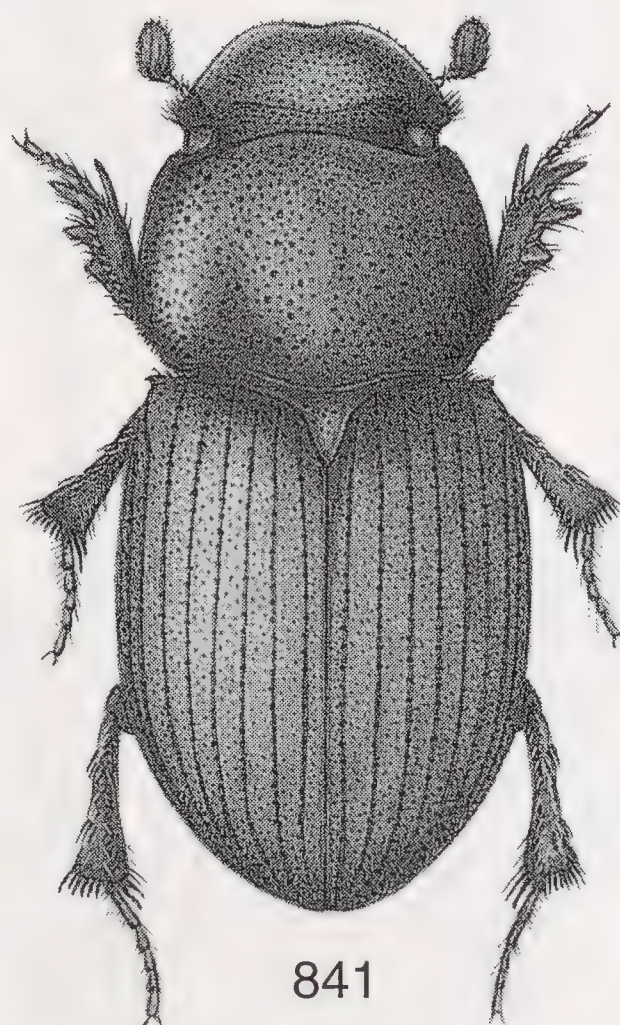
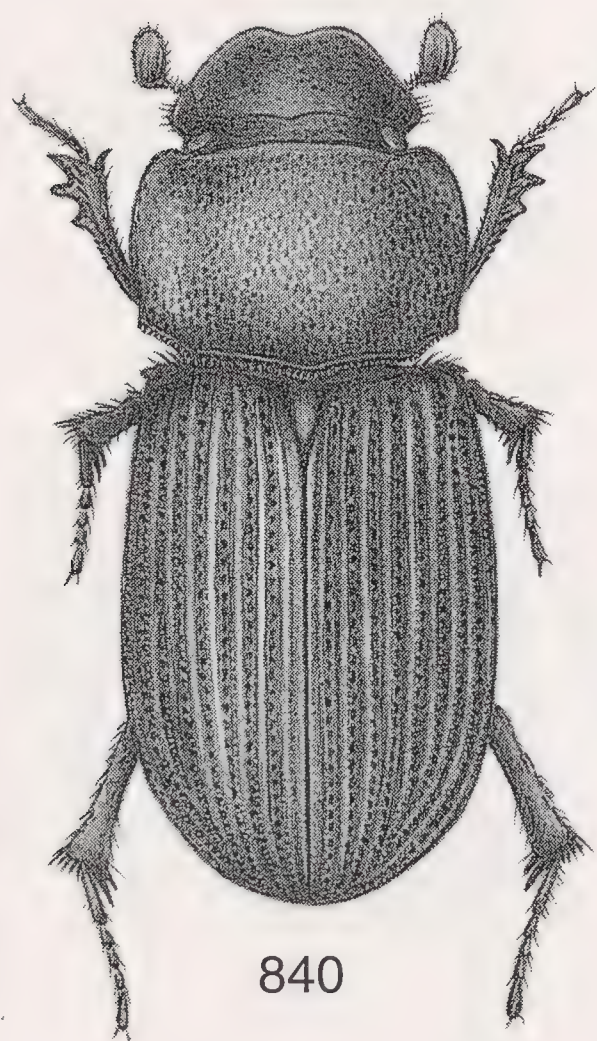
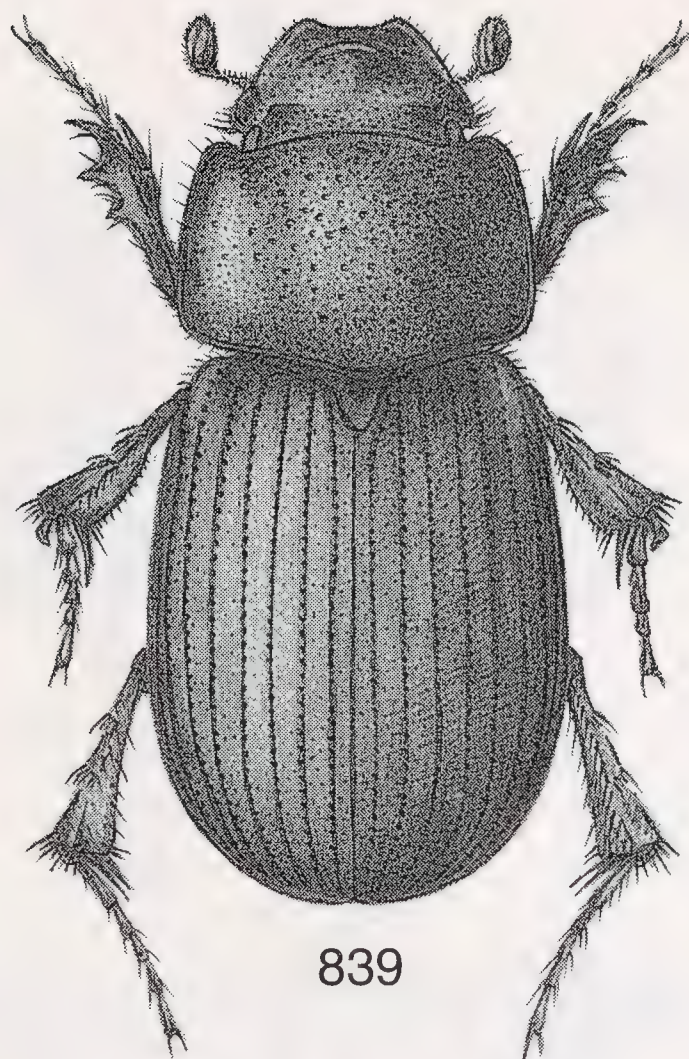
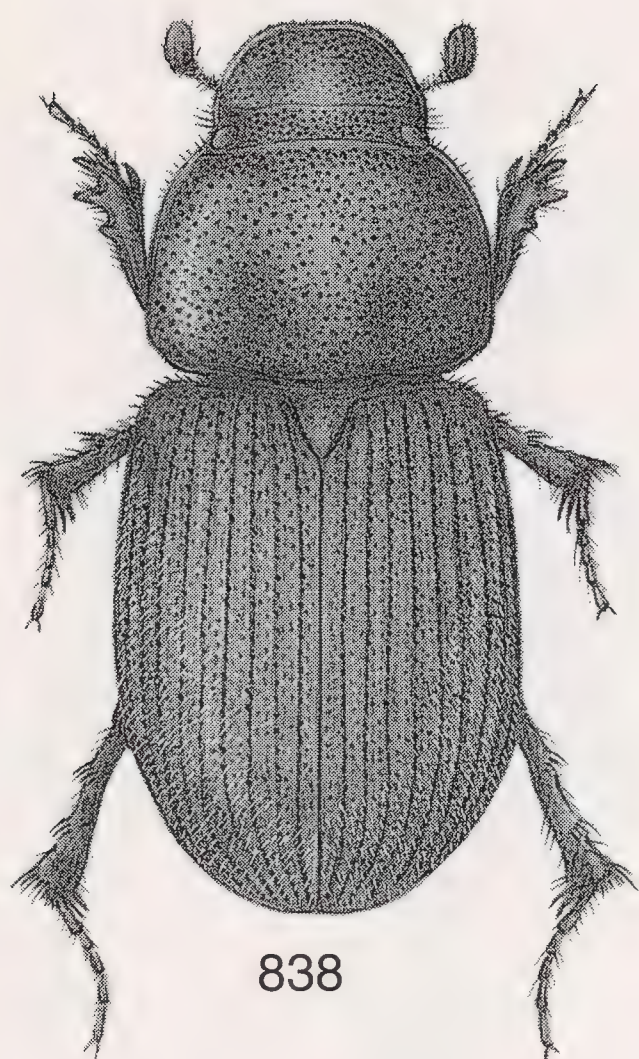
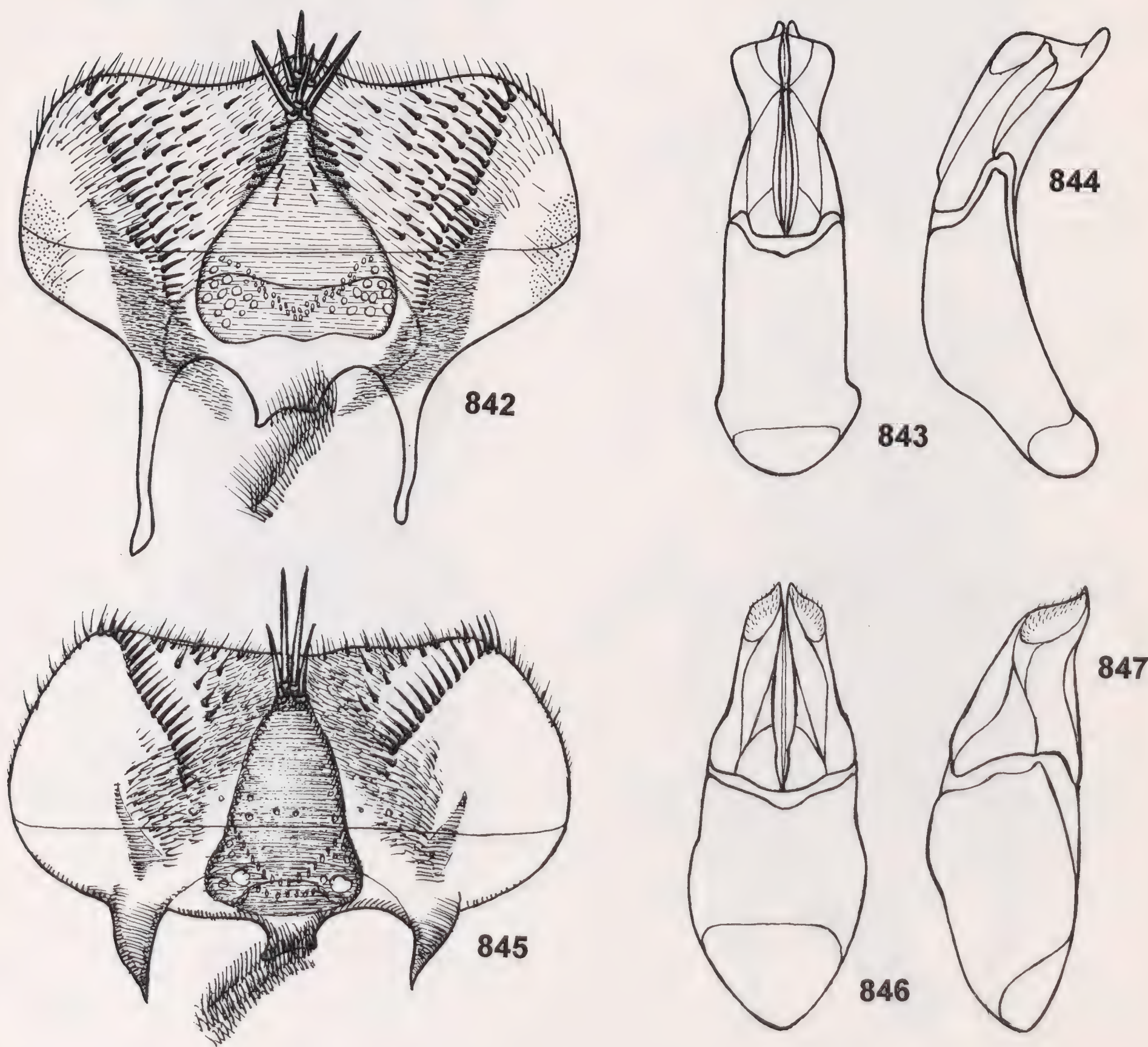


Fig. 838. *Pubinus tomentosus* (O. F. Müller, 1776) (male, length 5 mm) (Poland; Jaroslaw)

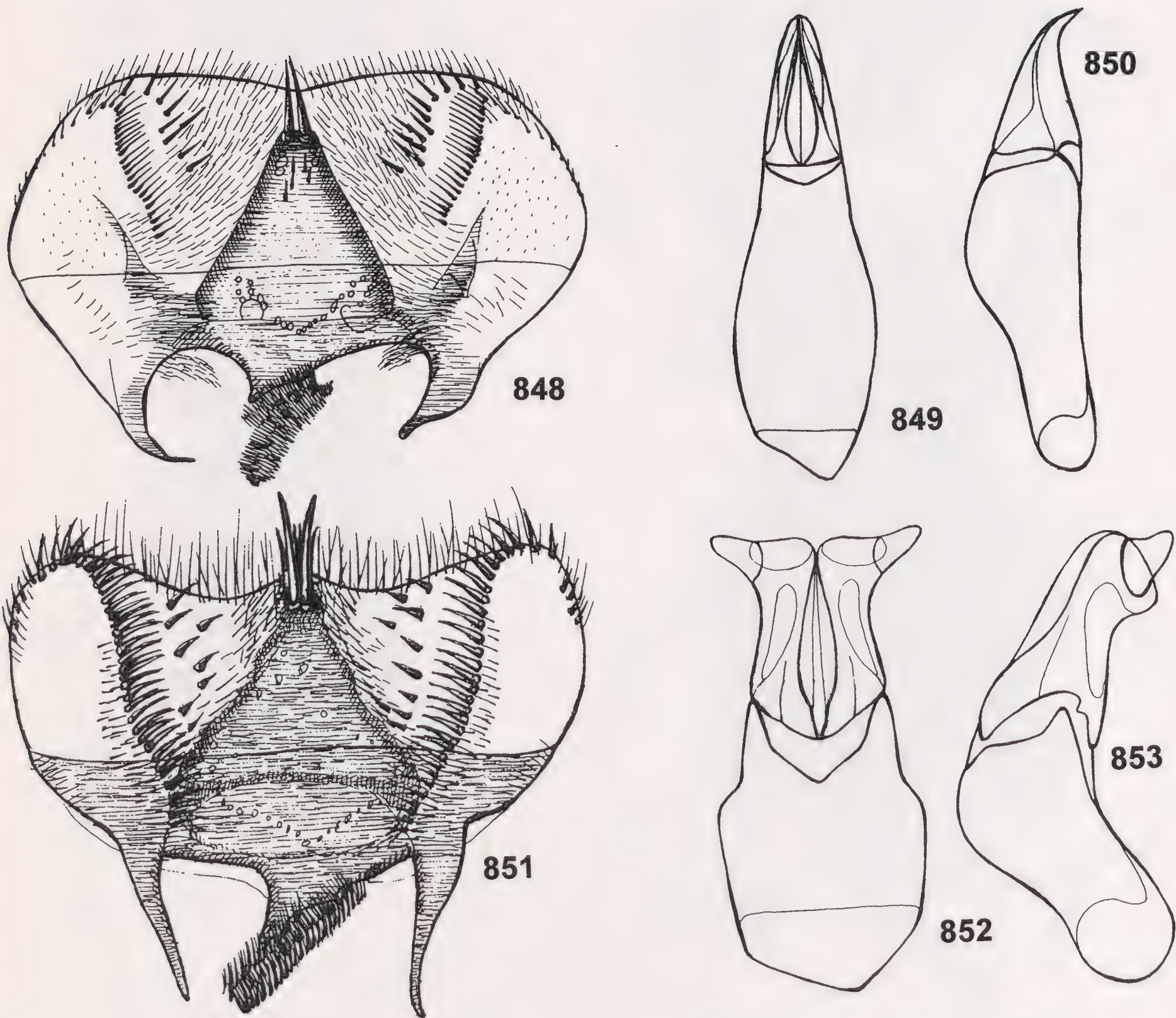
Fig. 839. *Qingaphodius nikodymi* (Král, 1997) (male, length 7 mm) (China; Qinghai region, Tiamjun, 120 Km W Qinghai Hu)

Fig. 840. *Renaudius tesari* (Paulian, 1942) (male, length 3.5 mm) (China; Sichuan, West of Lugiao Pass)

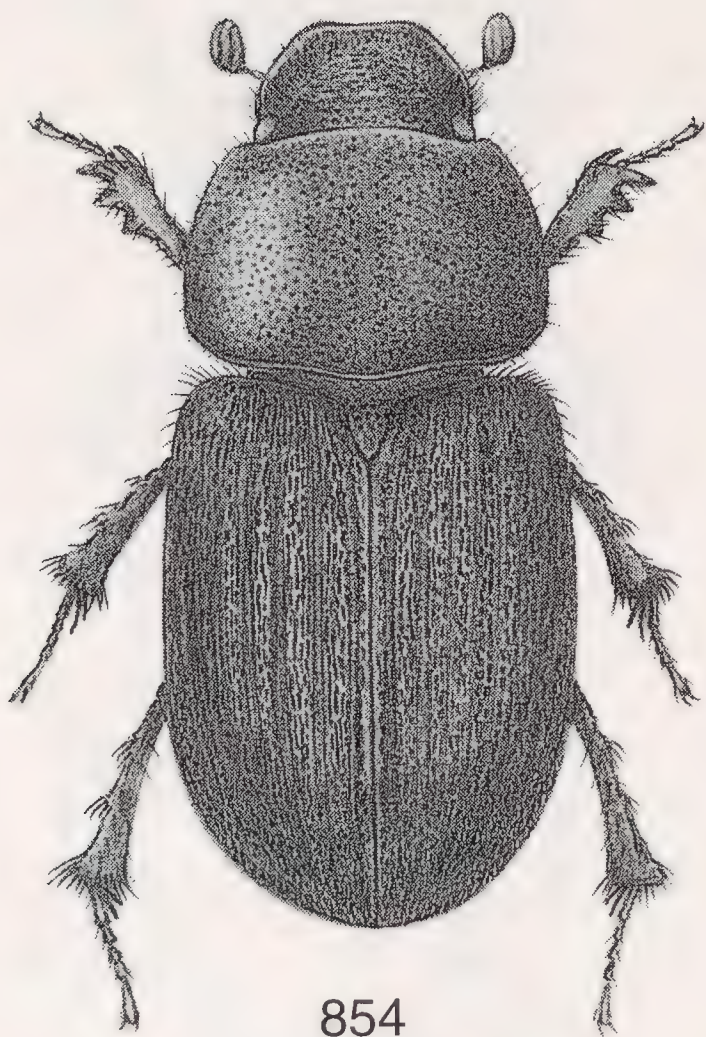
Fig. 841. *Siamaphodius naafon* (Masumoto, 1991) (male, length 4 mm) (Thailand; Chiang Mai Prov., Doi Inthanon)



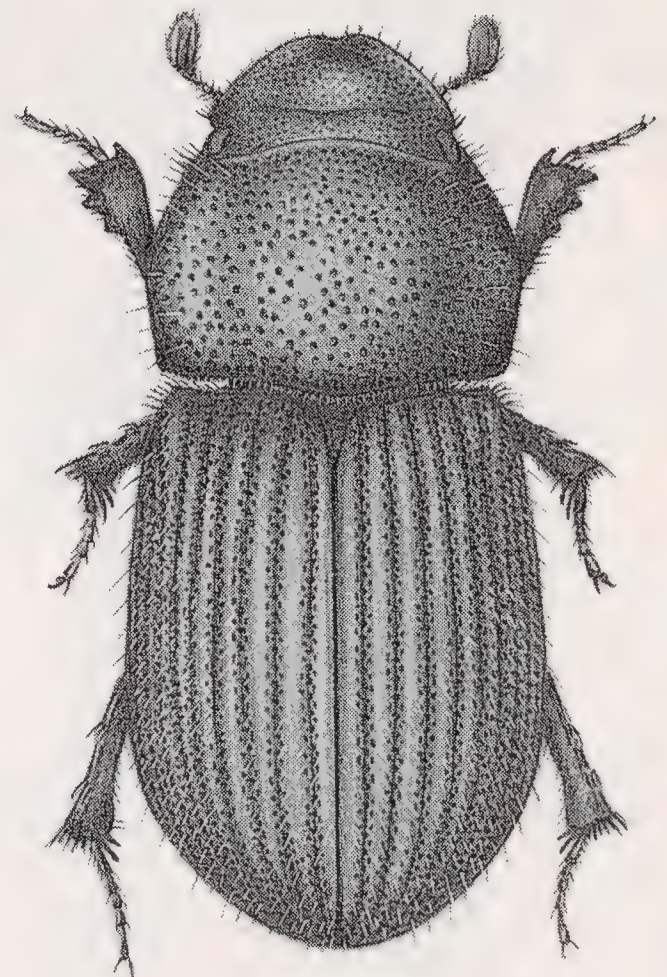
Figs 842-847. Epipharynx and aedeagus, dorsal and lateral view, of: 842-844 - *Qingaphodius nikodymi* (Král, 1997); 845-847 - *Renaudius tesari* (Paulian, 1942)



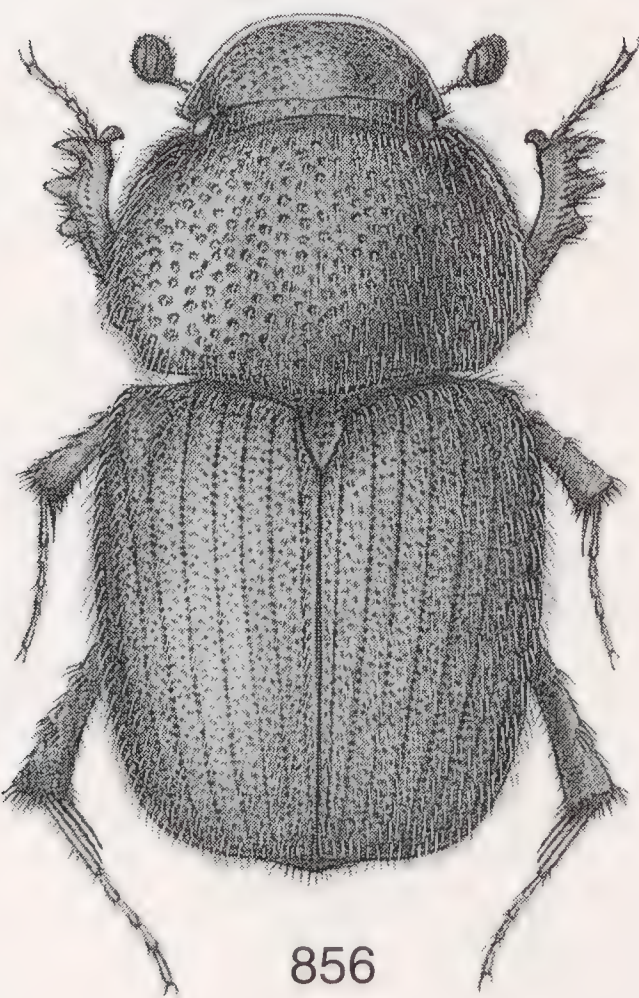
Figs 848-853. Epipharynx and aedeagus, dorsal and lateral view, of: 848-850 - *Siamaphodius naafon* (Masumoto, 1991); 851-853 - *Sigorus porcus* (Fabricius, 1792)



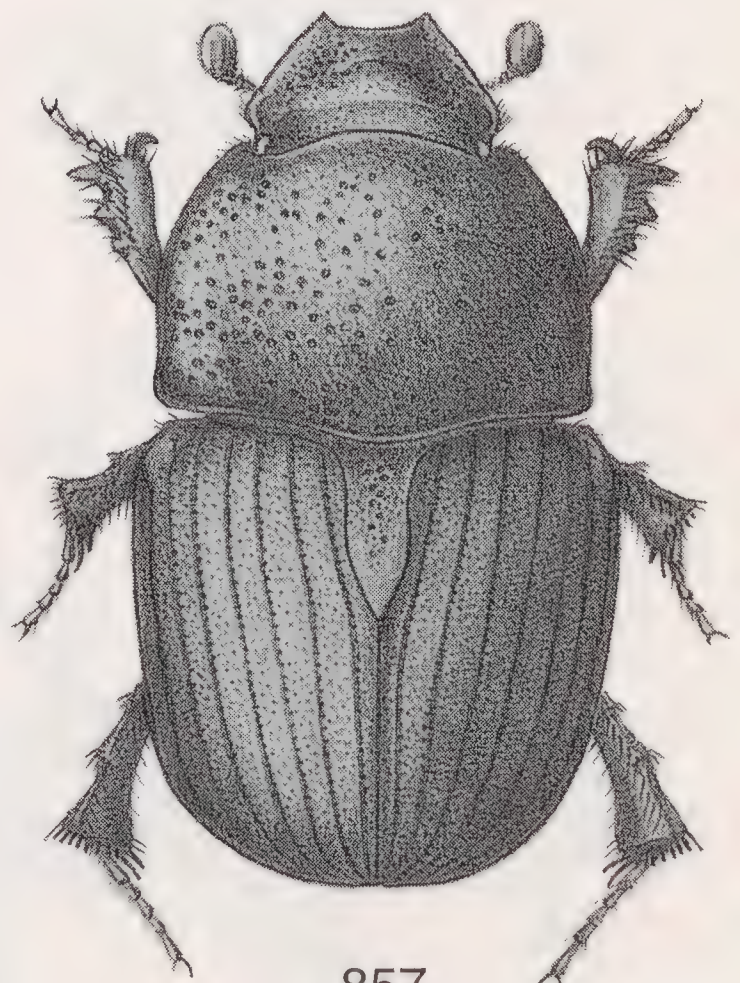
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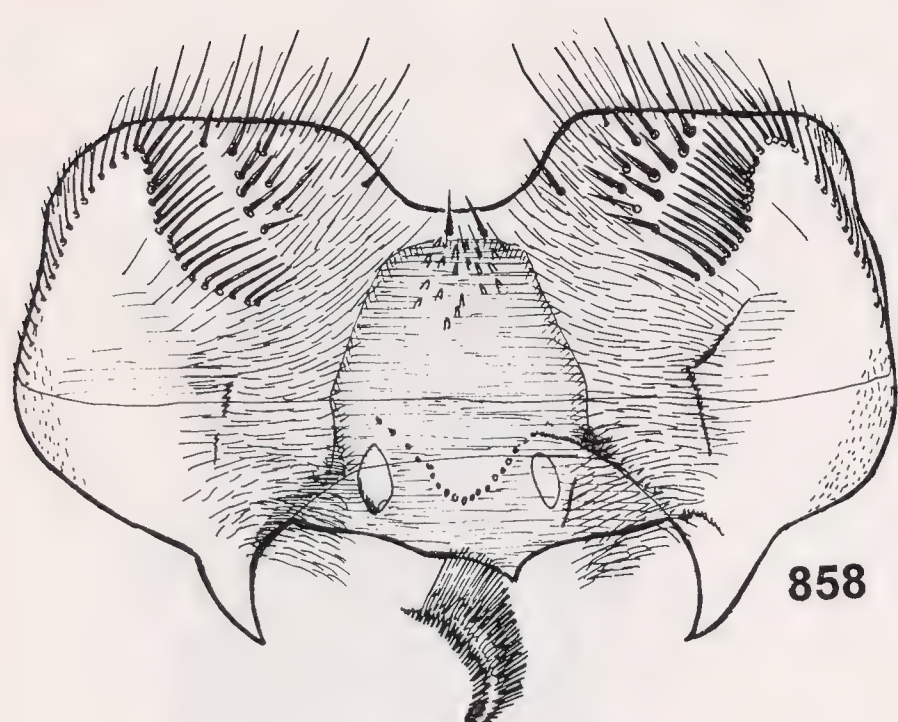
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Fig. 854. *Sigorus porcus* (Fabricius, 1792) (male, length 5 mm) (Italy; Piemonte, Alessandria, Gavi)

Fig. 855. *Simogonius beccarii* Harold, 1871 (male, length 4.5 mm) (Ethiopia; Ghinda)

Fig. 856. *Sinaphodius yunnanus* (Červenka, 1994) (male, length 5 mm) (China; Yunnan, Jinghong)

Fig. 857. *Sinodiapterna troitzkyi* (Jacobson, 1896) (male, length 6 mm) (China; Paità)



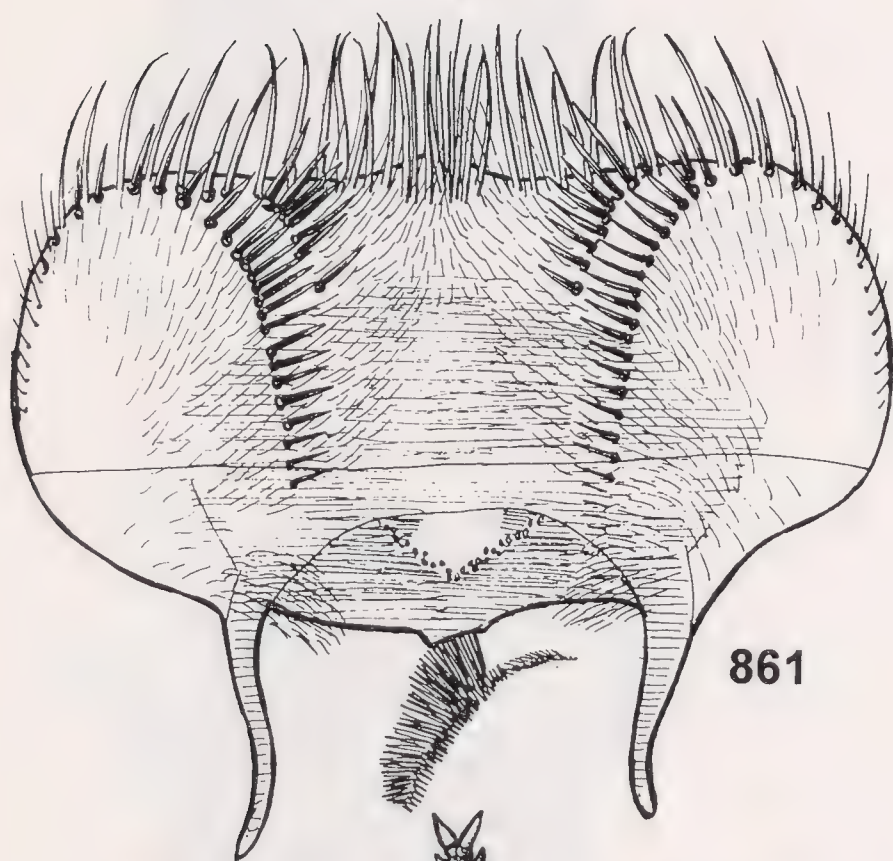
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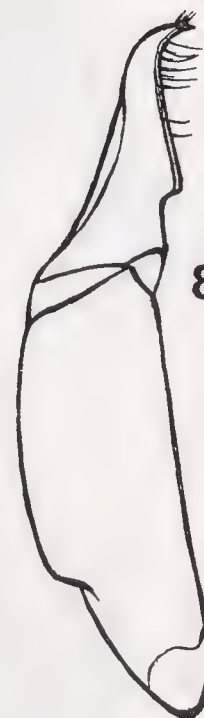
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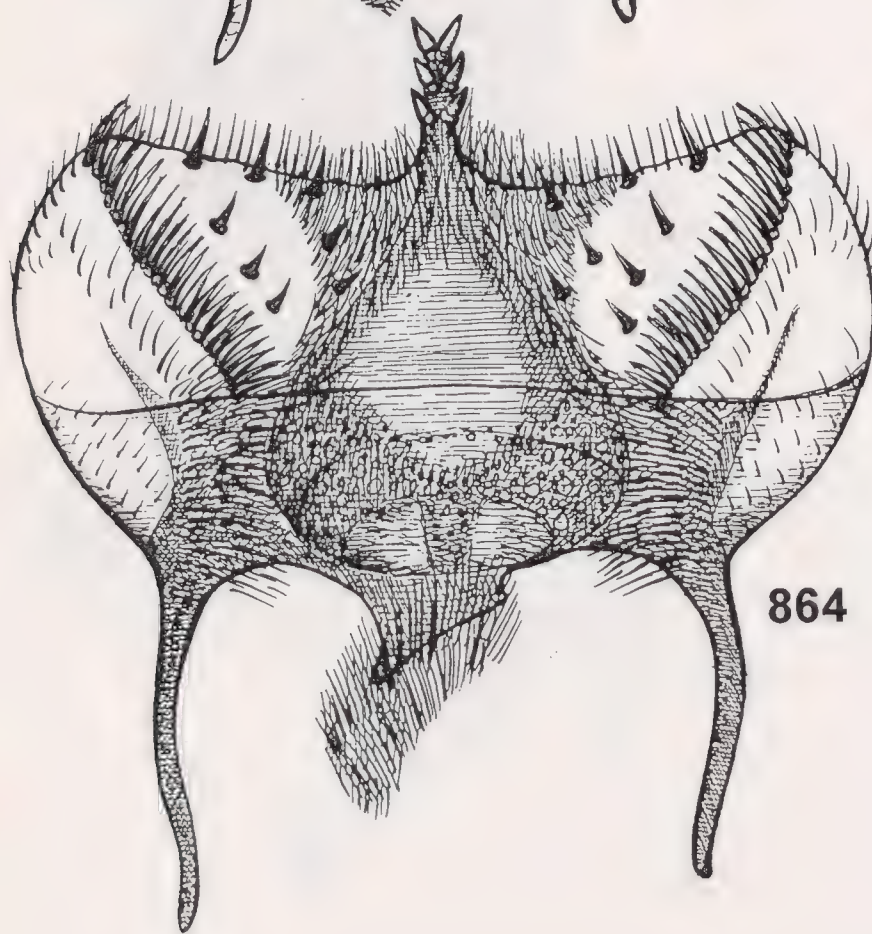
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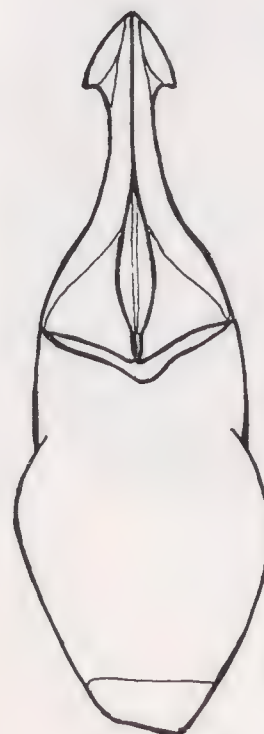
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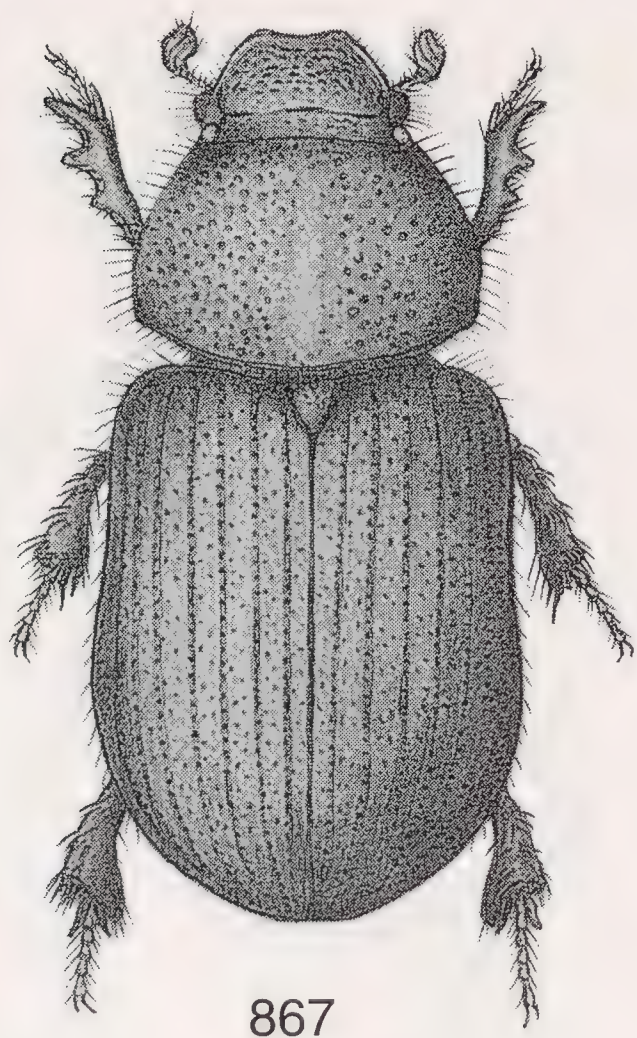


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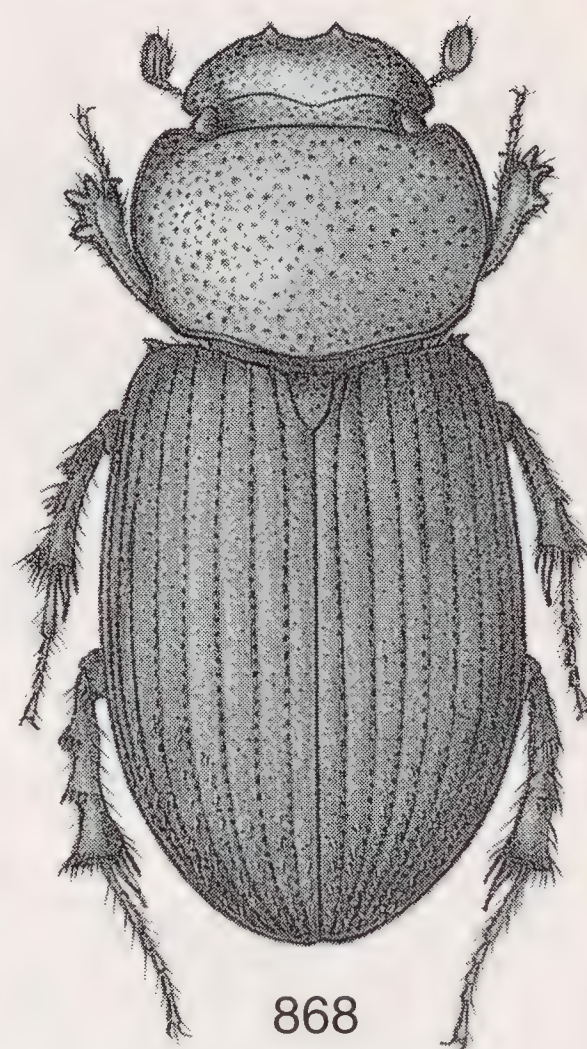


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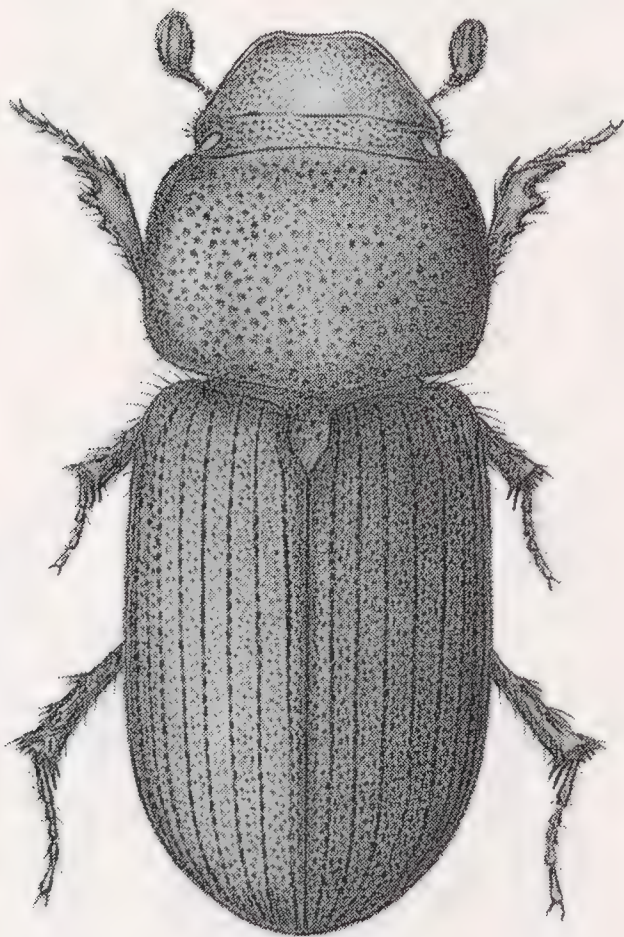
Figs 858-866. Epipharynx and aedeagus, dorsal and lateral view, of: 858-860 - *Simogonius beccarii* Harold, 1871; 861-863 - *Sinaphodius yunnanus* (Červenka, 1994); 864-866 - *Sinodiapterna troitzkyi* (Jacobson, 1896)



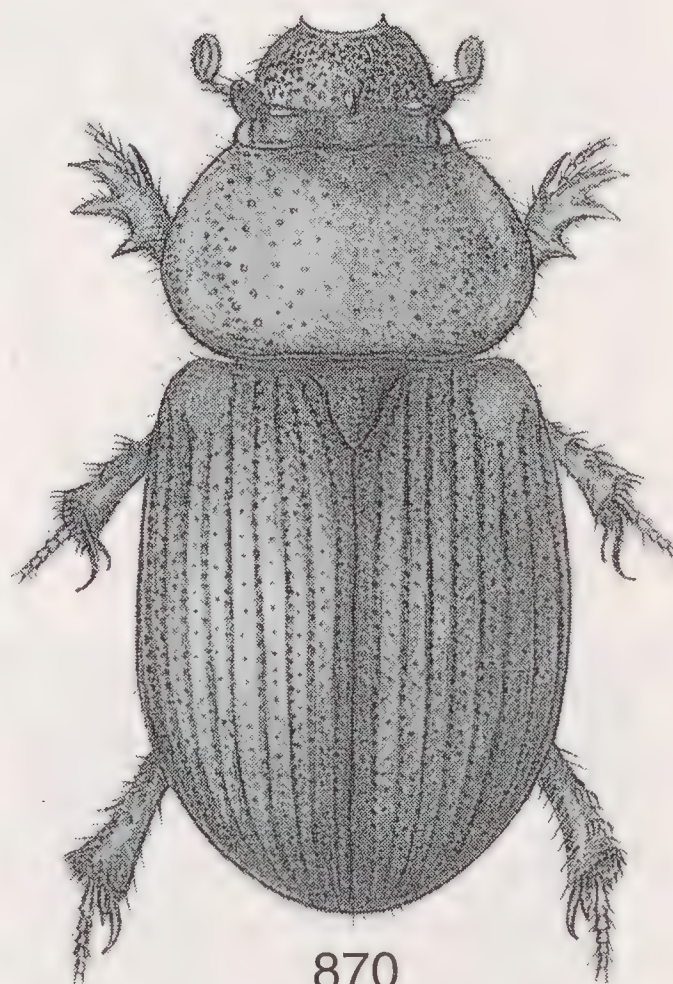
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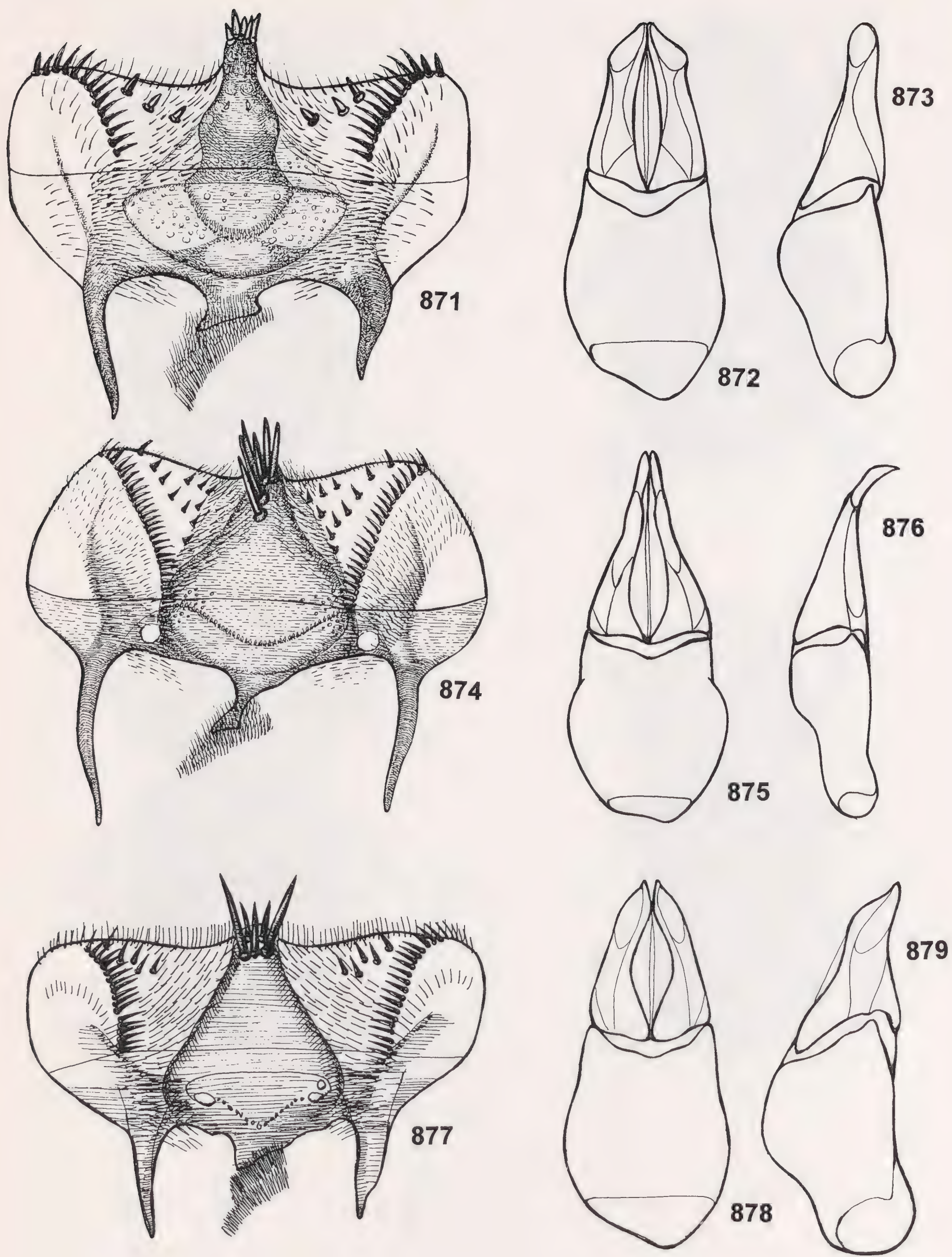
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Fig. 867. *Sitiphus brevitarsis* (Reitter, 1894) (male, length 3.5 mm) (Algeria; Aïn Sefra)

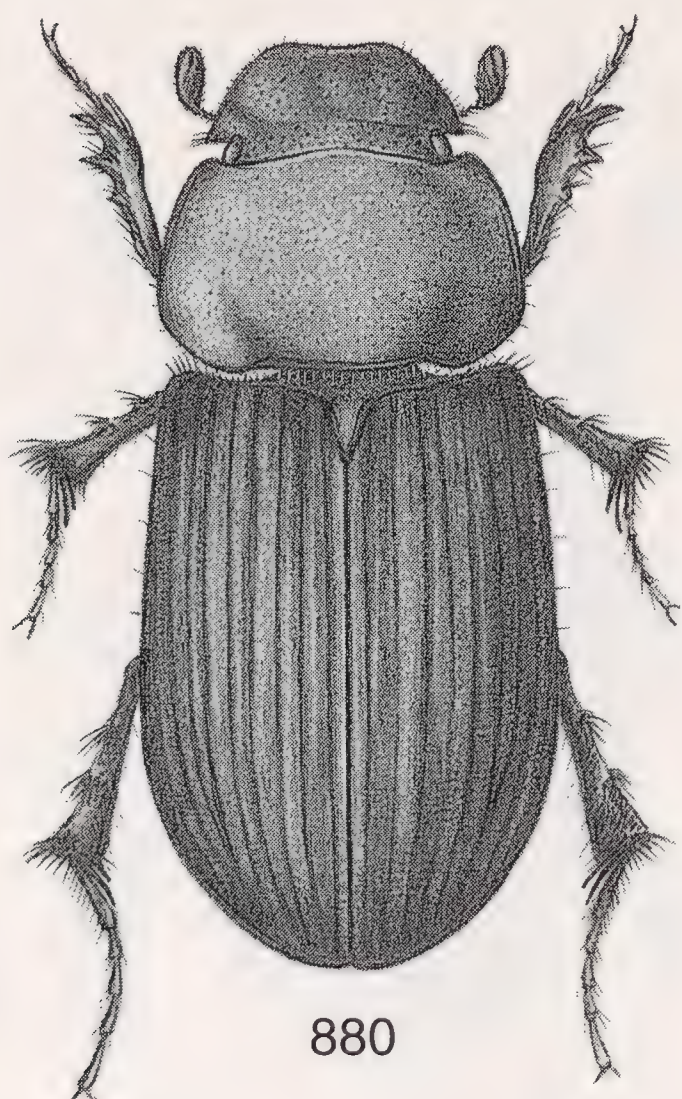
Fig. 868. *Stenotothorax oblongus* (Say, 1823) (male, length 8 mm) (USA; Oklahoma, Latimer Co.)

Fig. 869. *Subrinus sturmi* (Harold, 1870) (male, length 4 mm) (Italy; Calabria, Catanzaro, Santa Maria di Ricadi)

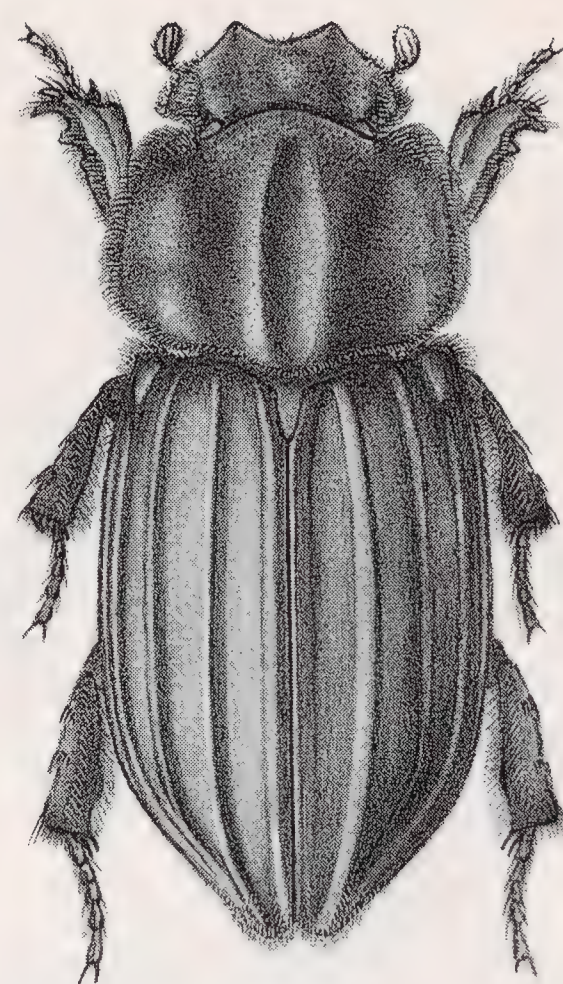
Fig. 870. *Sugrames hauseri* Reitter, 1894 (male, length 3.5 mm) (Turkmenistan; Kuschka)



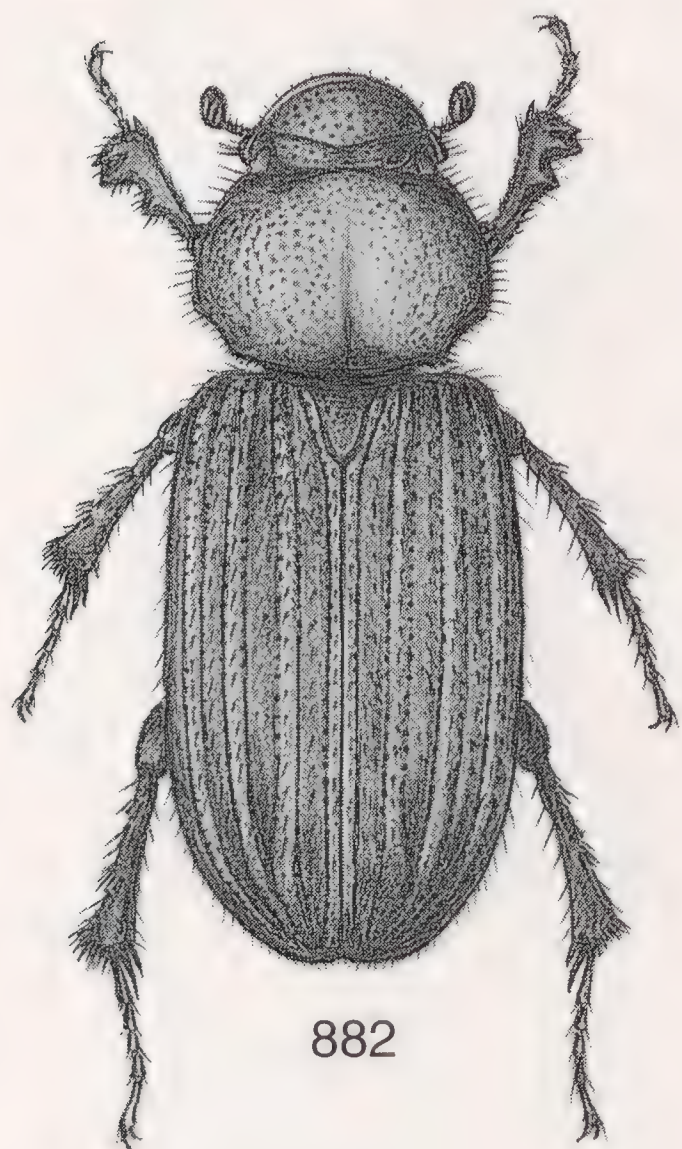
Figs 871-879. Epipharynx and aedeagus, dorsal and lateral view, of: 871-873 - *Sitiphus brevitarsis* (Reitter, 1894); 874-876 - *Stenotothorax oblongus* (Say, 1823); 877-879 - *Subrinus sturmi* (Harold, 1870)



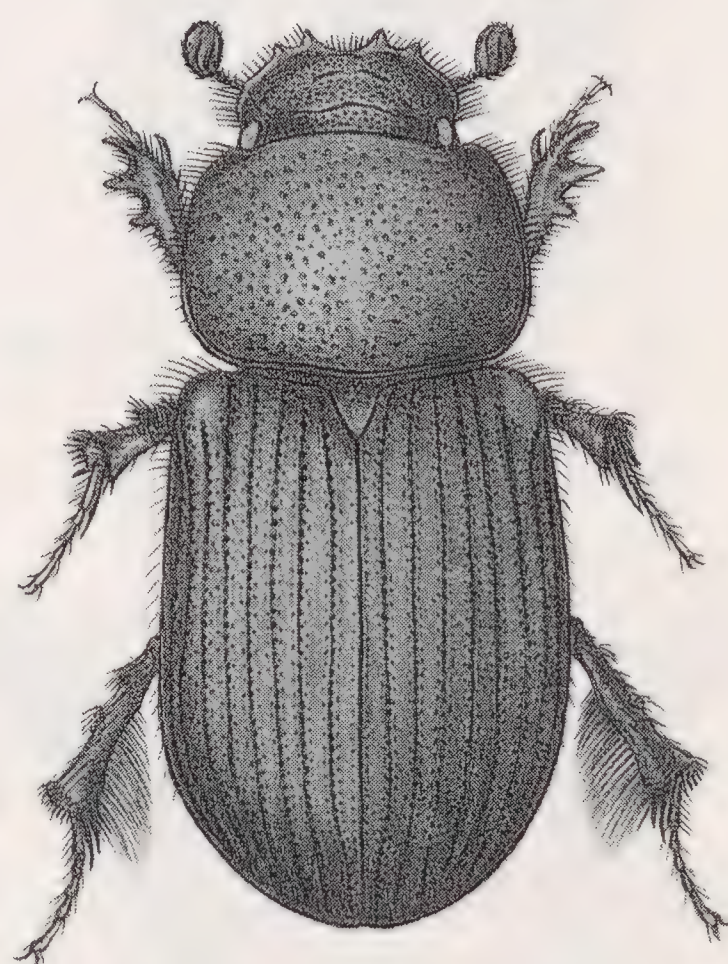
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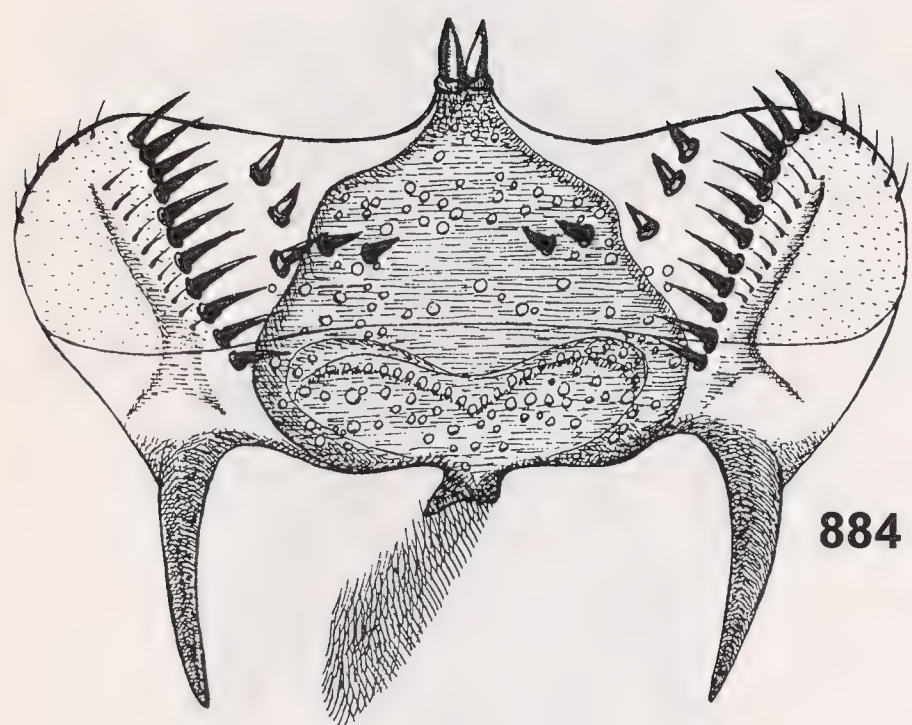
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Fig. 880. *Sussorca lusingae* (Paulian, 1954) (male, length 8 mm) (Zaire; Upemba Nat. Park, Kankunda)

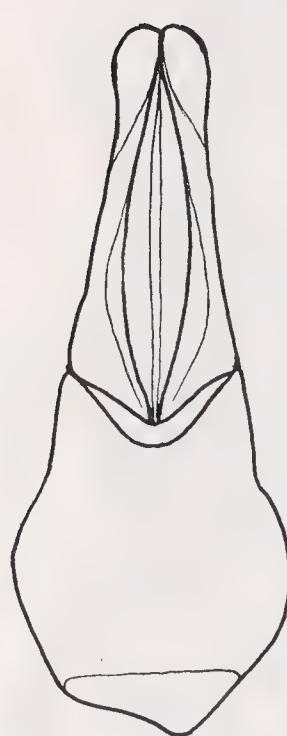
Fig. 881. *Sybax sulcicollis* Boheman, 1857 (male, length 10 mm) (Malawi; Liwonde Nat. Park)

Fig. 882. *Symphodon anomalum* (Harold, 1874) (female, length 8 mm) (Chile; Chillan)

Fig. 883. *Tetraclypeoides denticulatus* (Haldeman, 1848) (male, length 7 mm) (USA; Utah, Cedar Mts., Cane Spring)



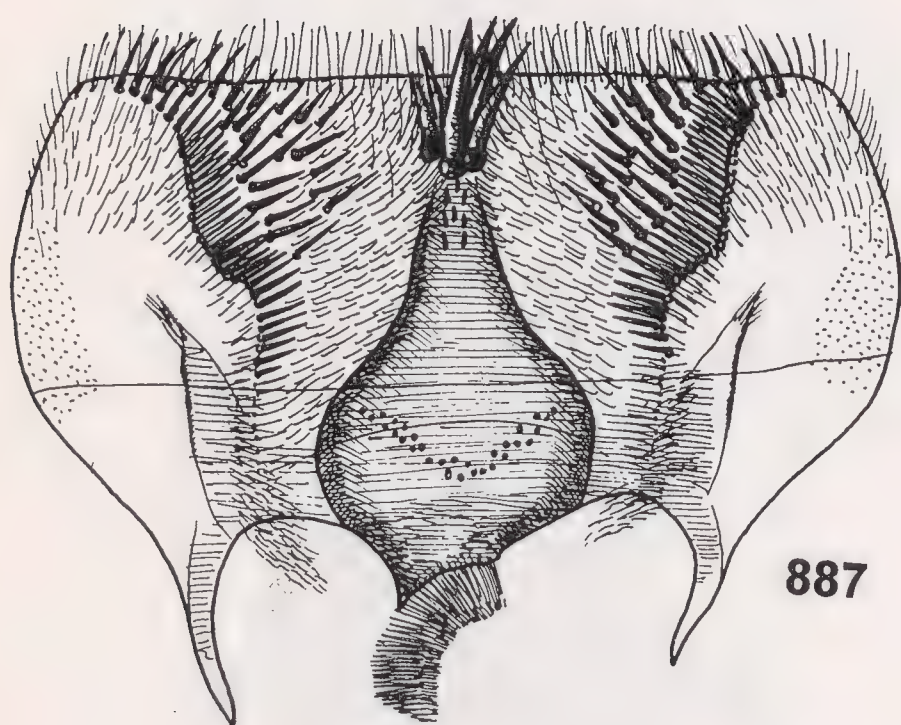
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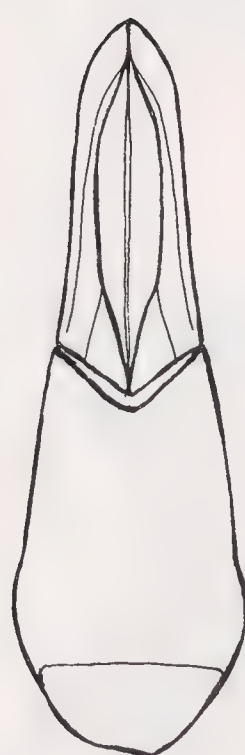
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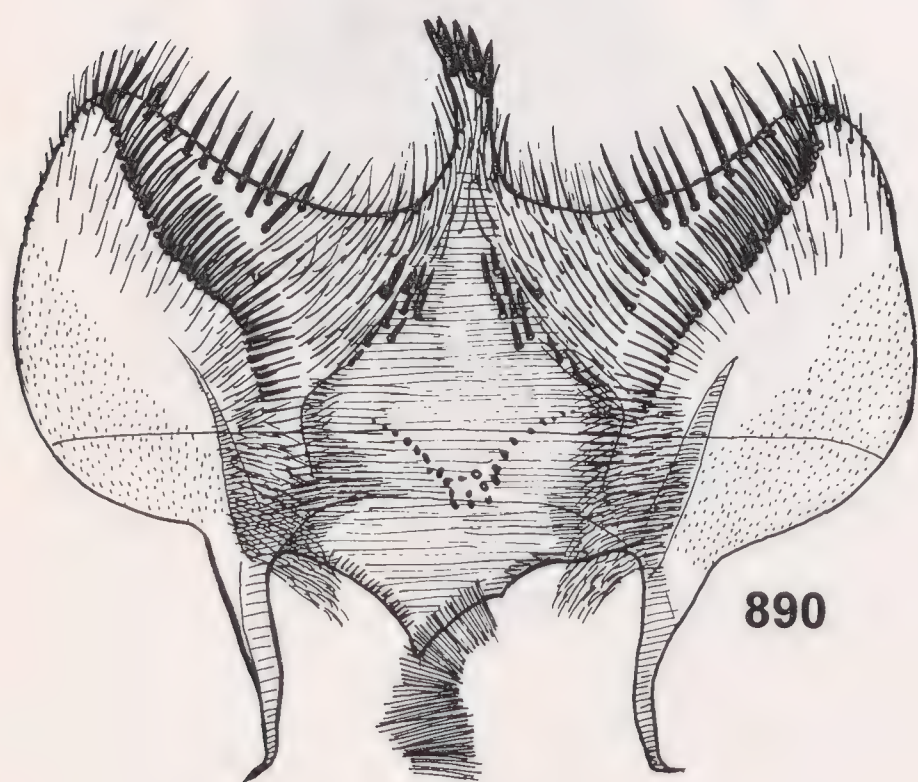
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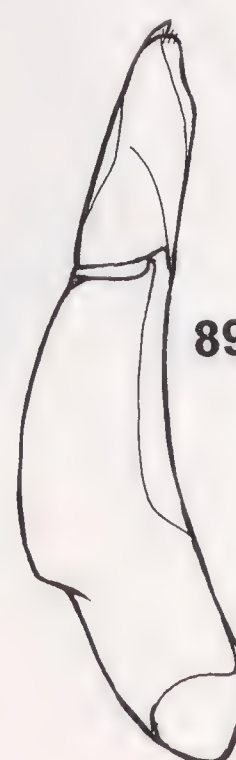
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Figs 884-892. Epipharynx and aedeagus, dorsal and lateral view, of: 884-886 - *Sugrames hauseri* Reitter, 1894; 887-889 - *Sussorca lusingae* (Paulian, 1954); 890-892 - *Sybax sulcicollis* Boheman, 1857

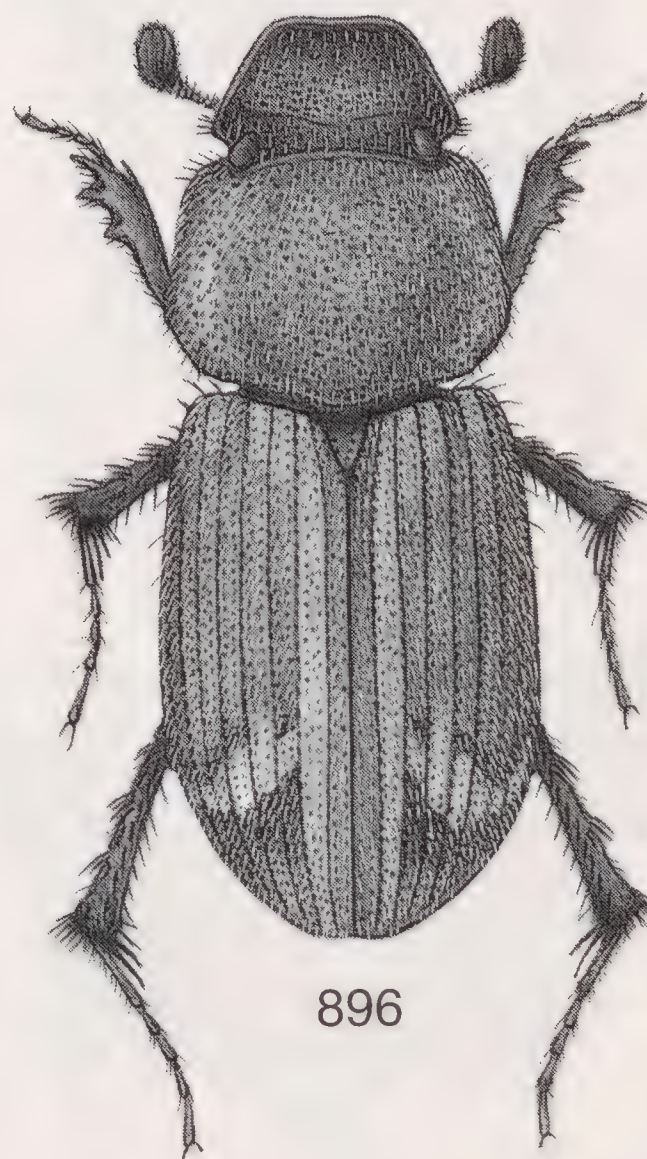
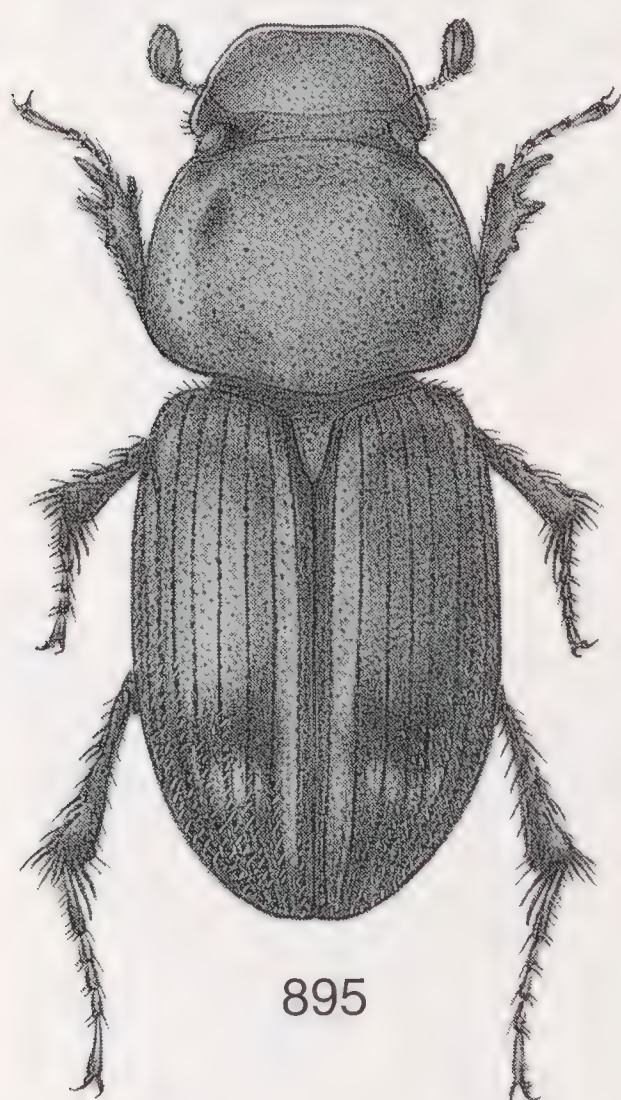
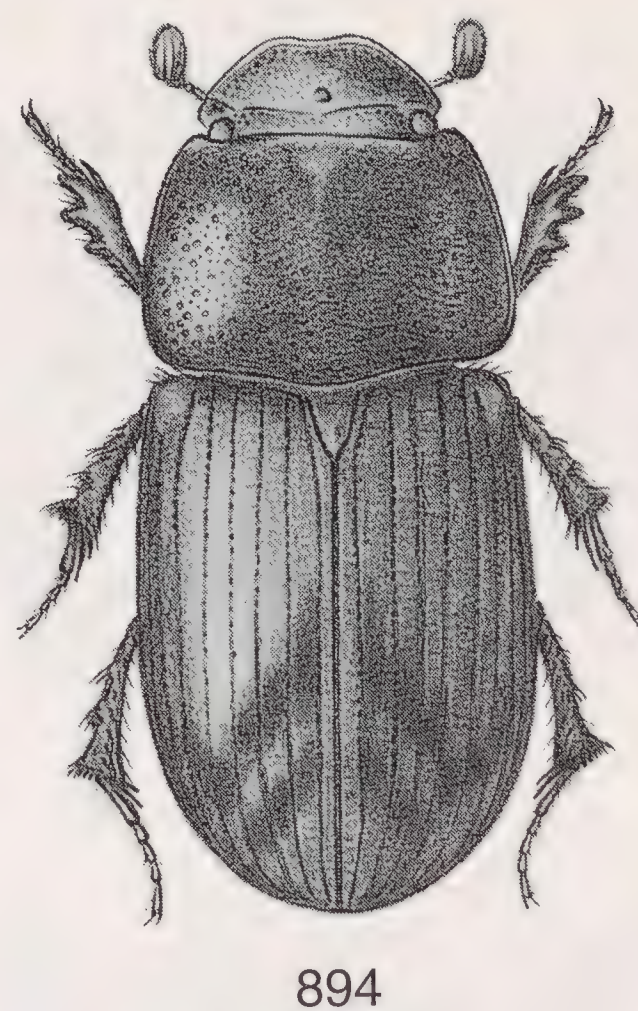
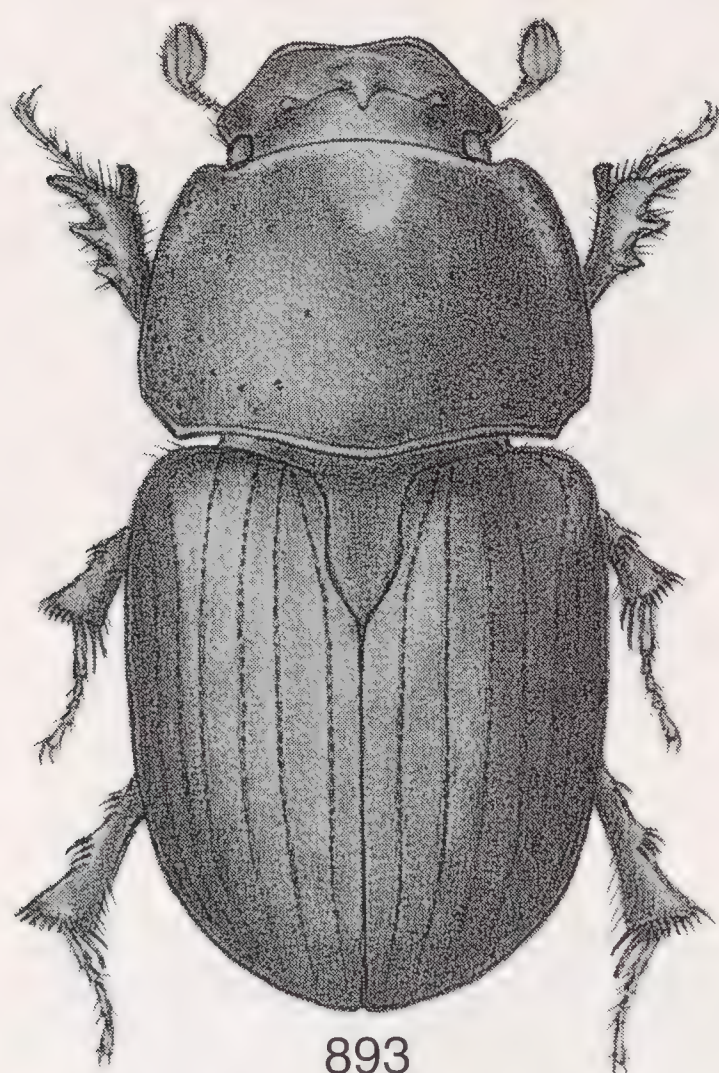
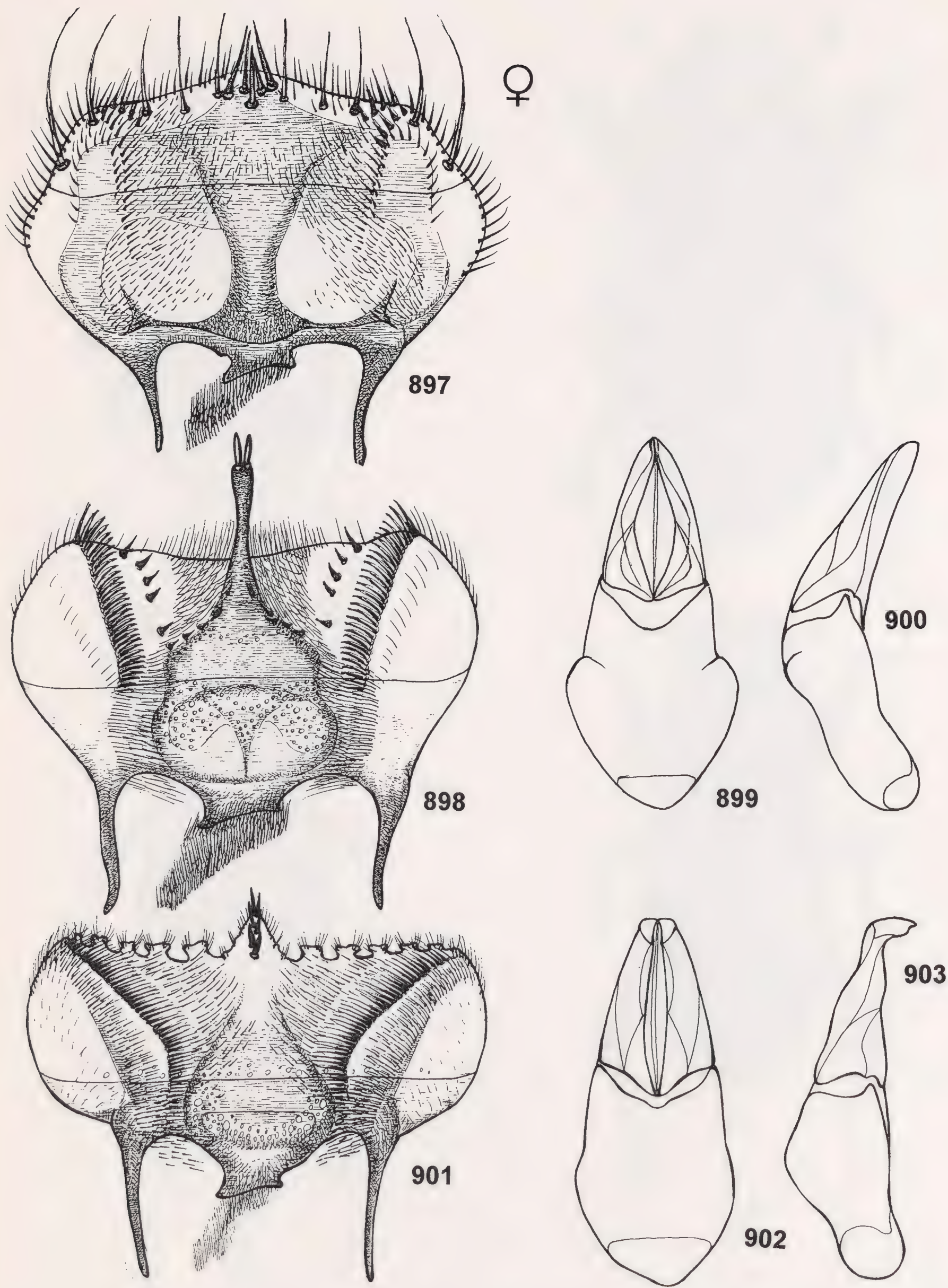


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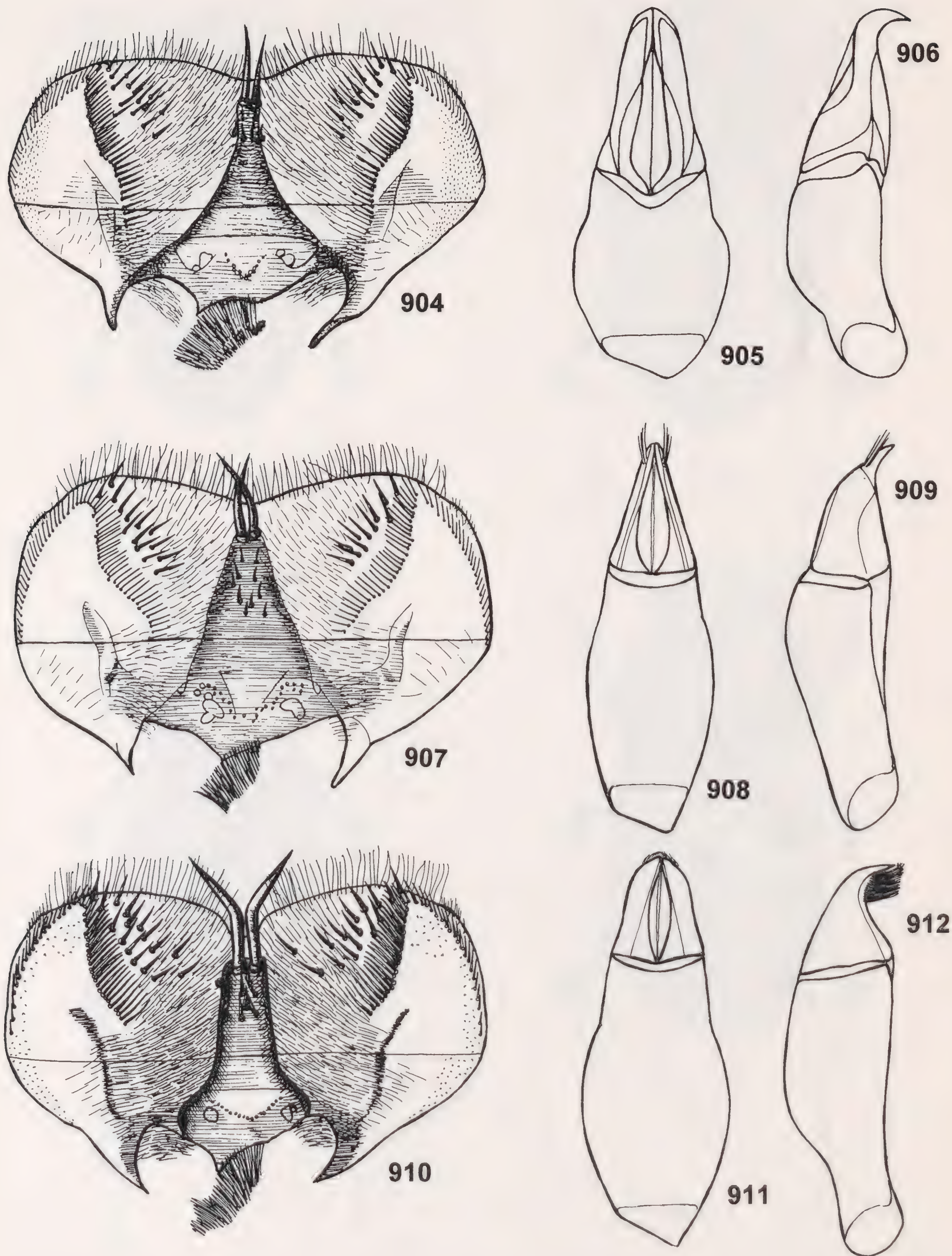
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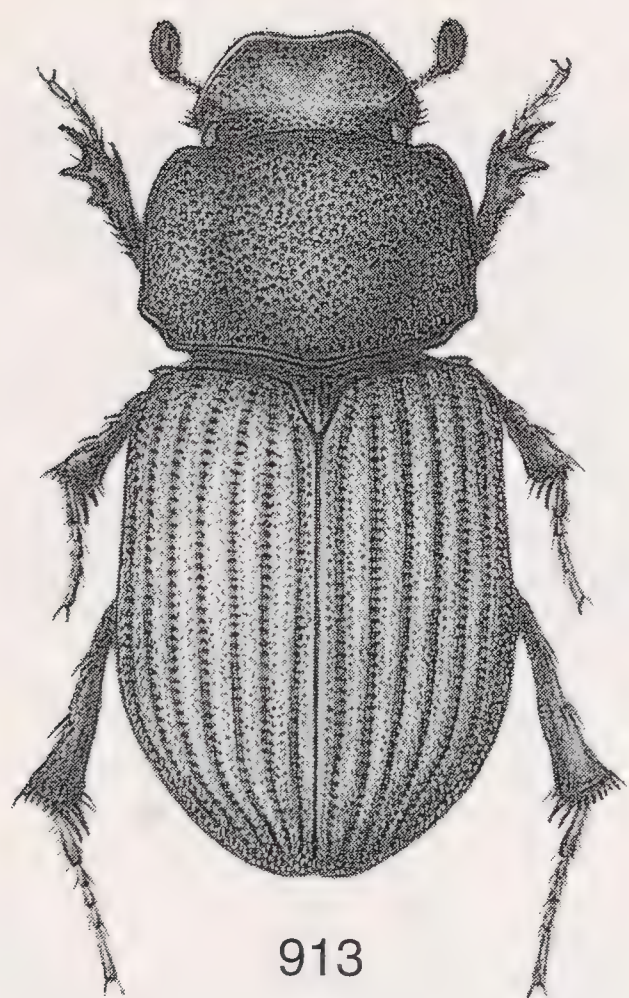
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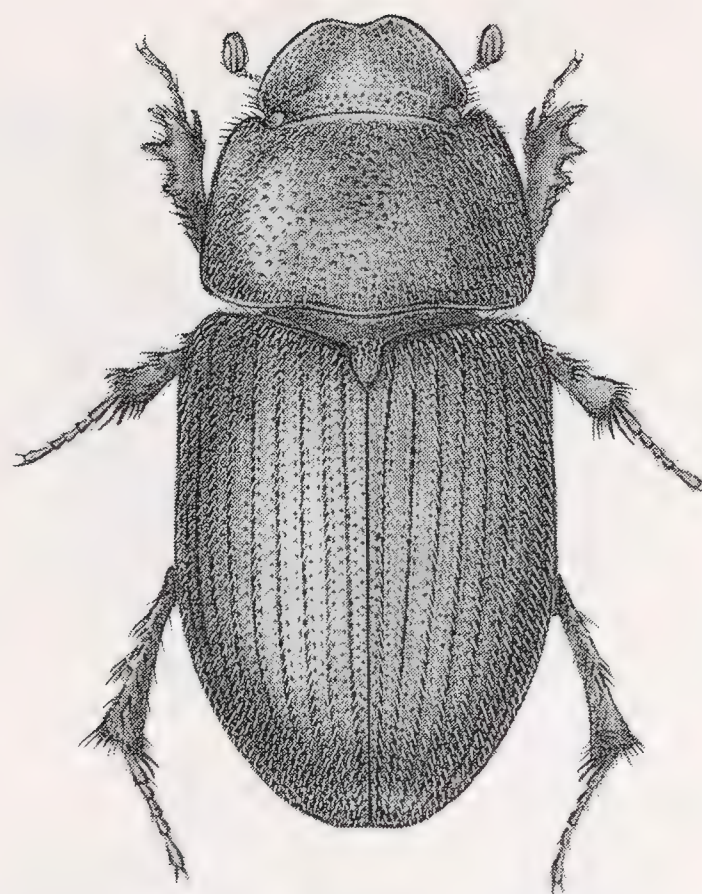
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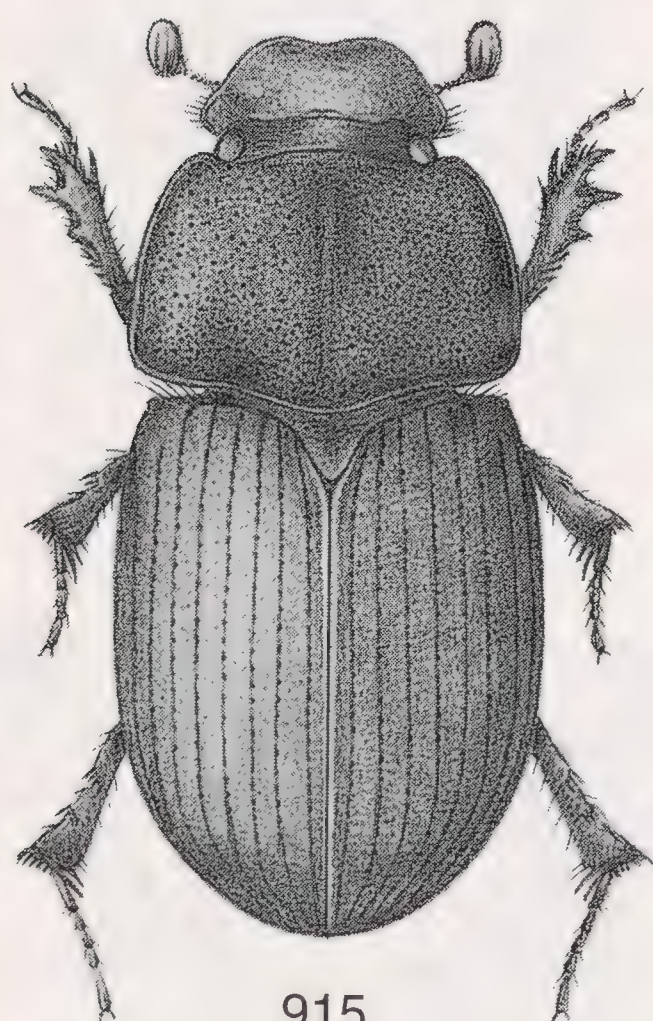
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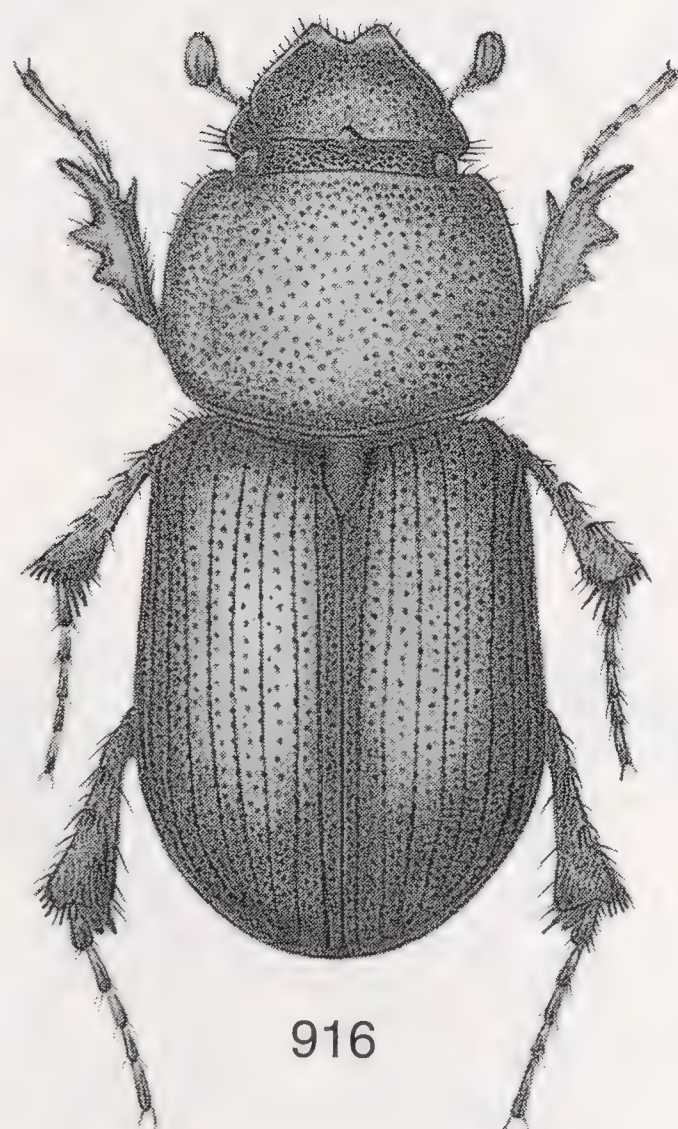
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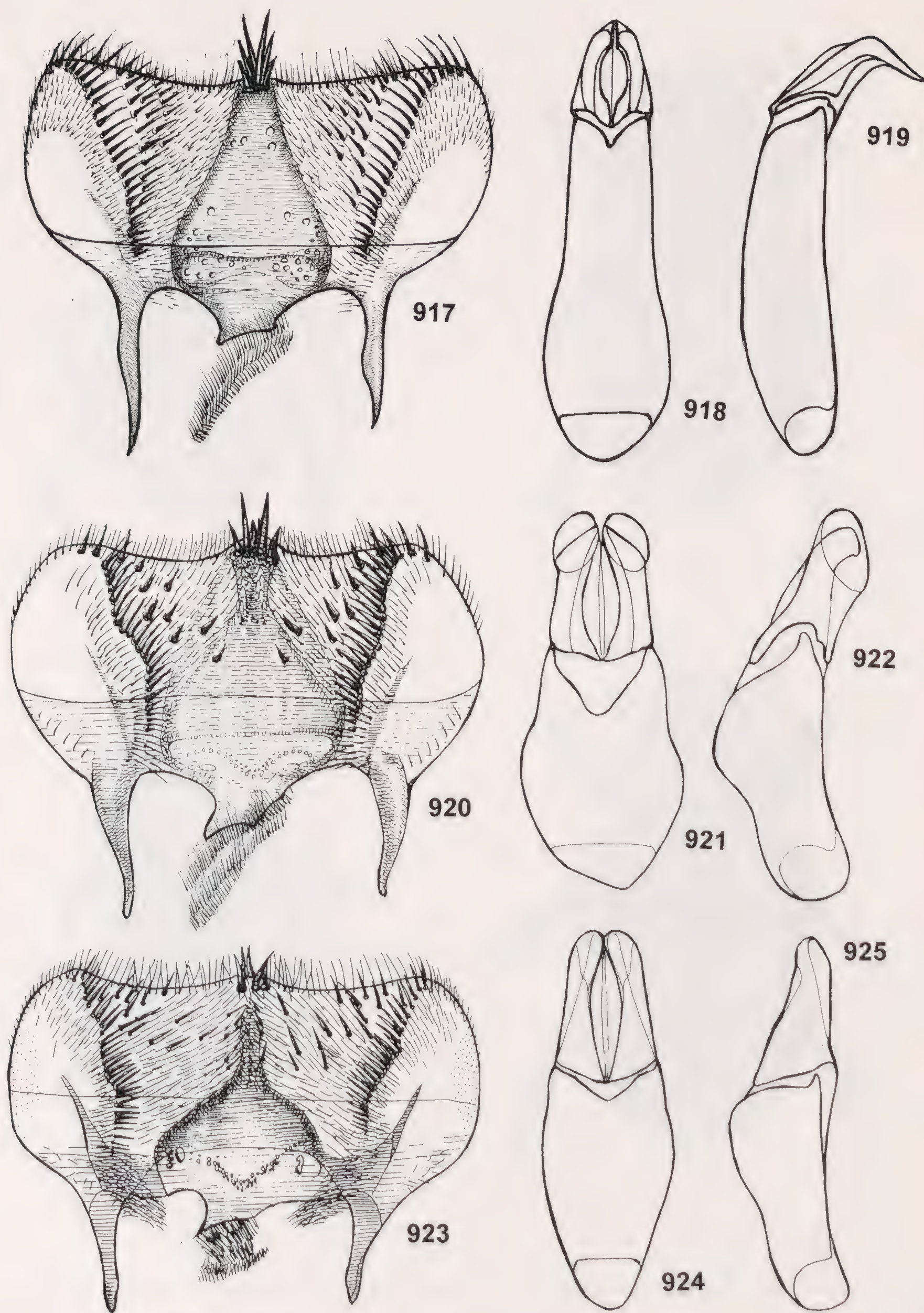
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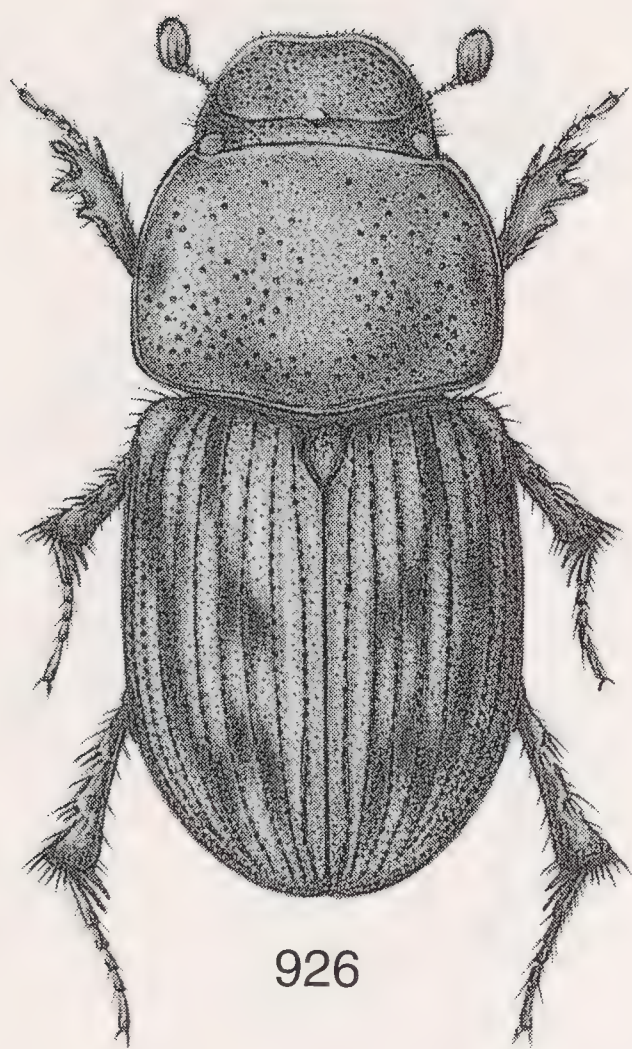
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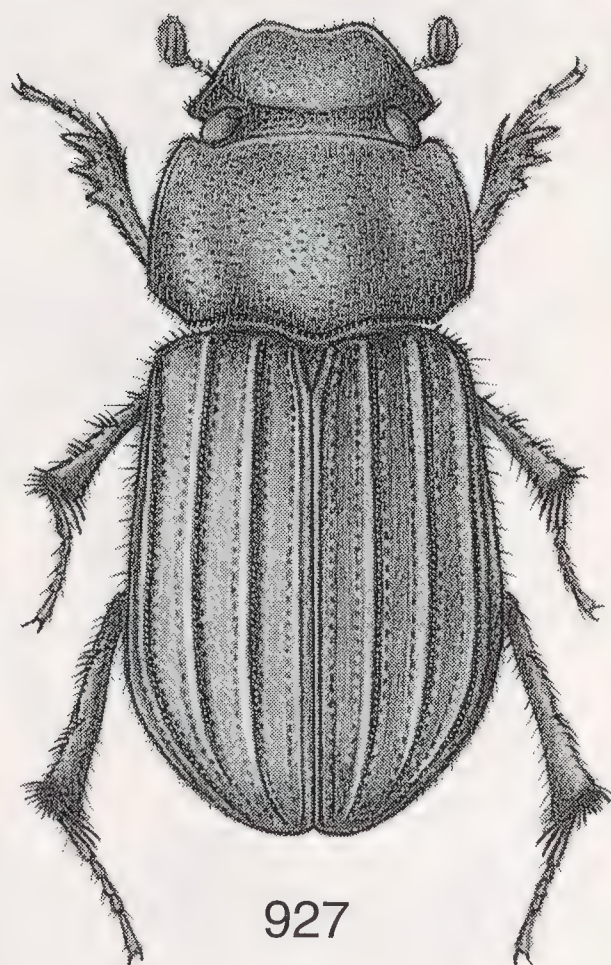
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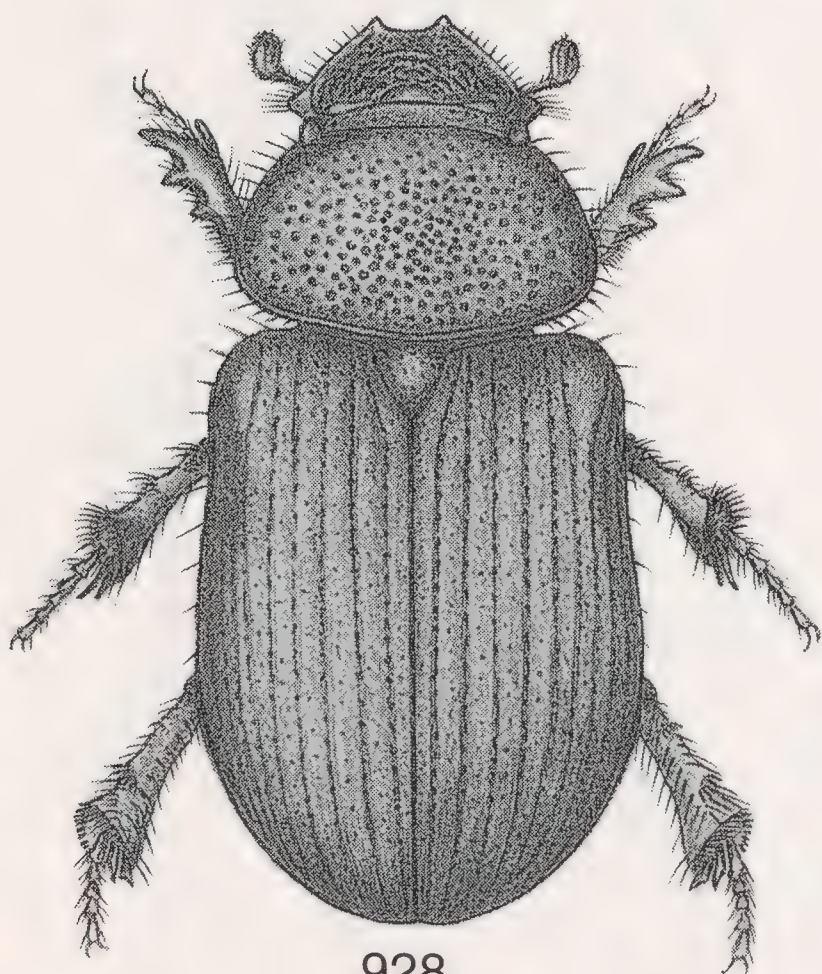
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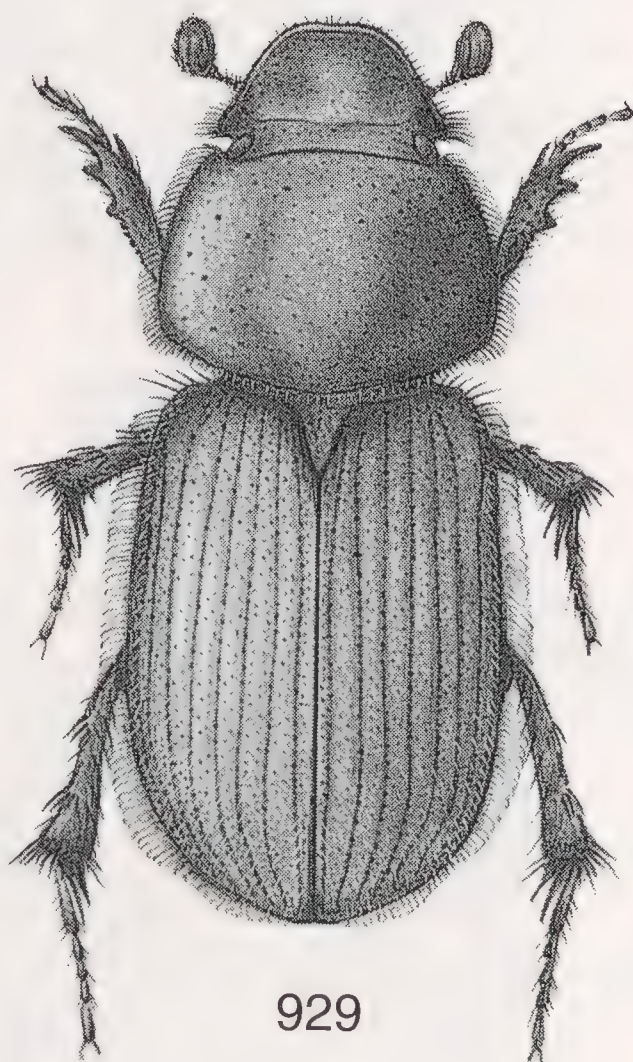
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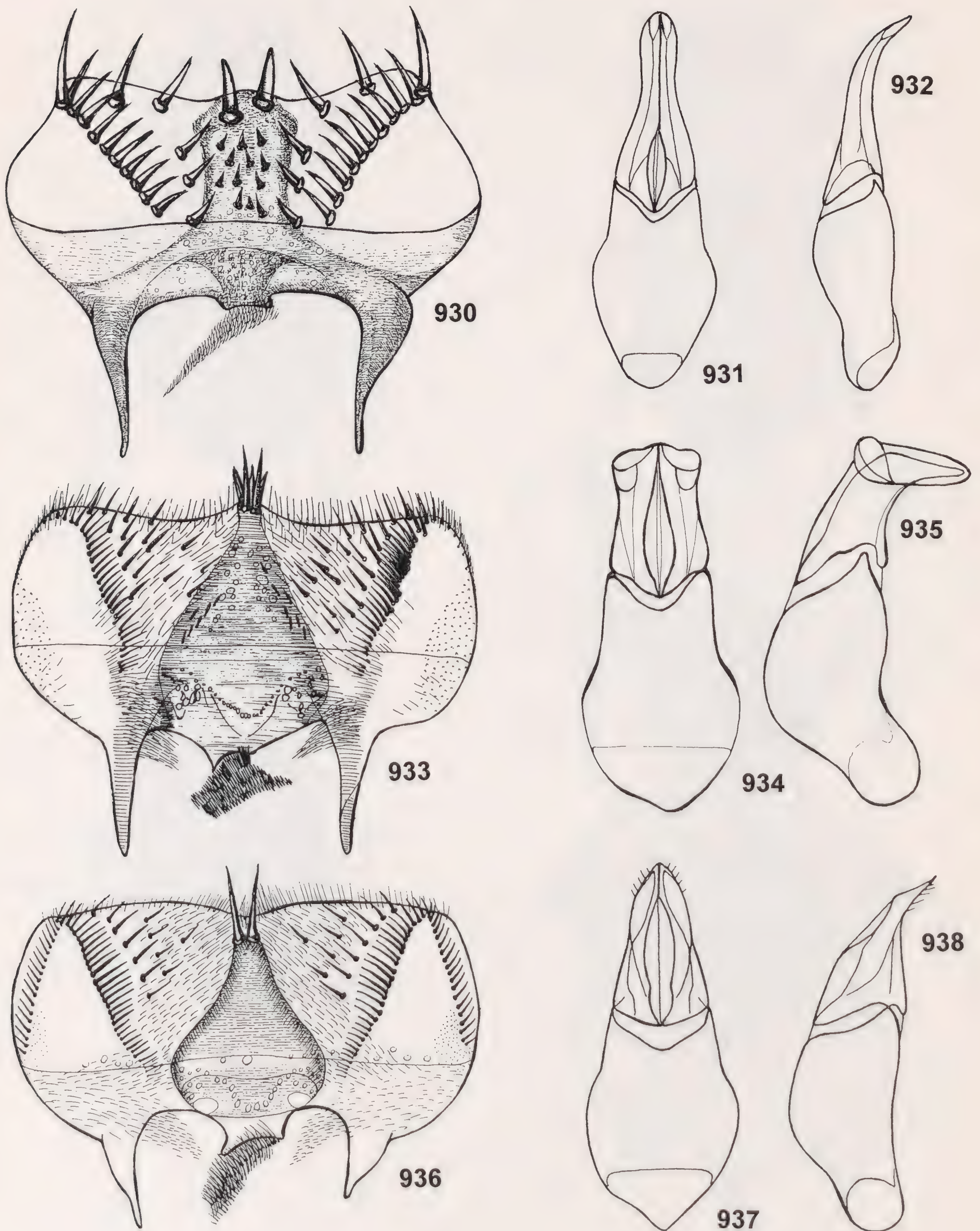
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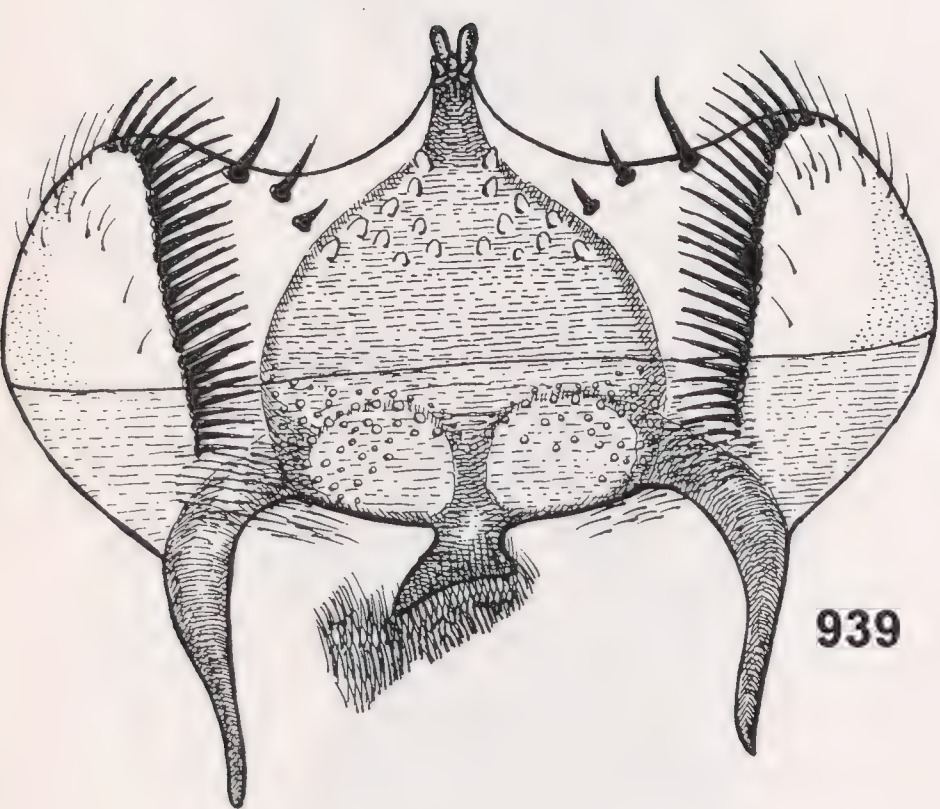
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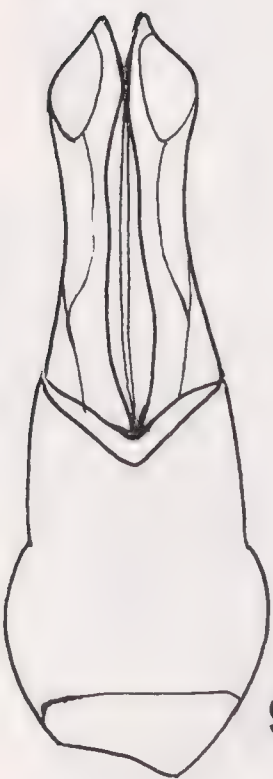
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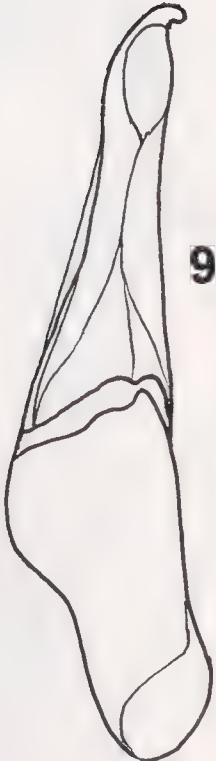
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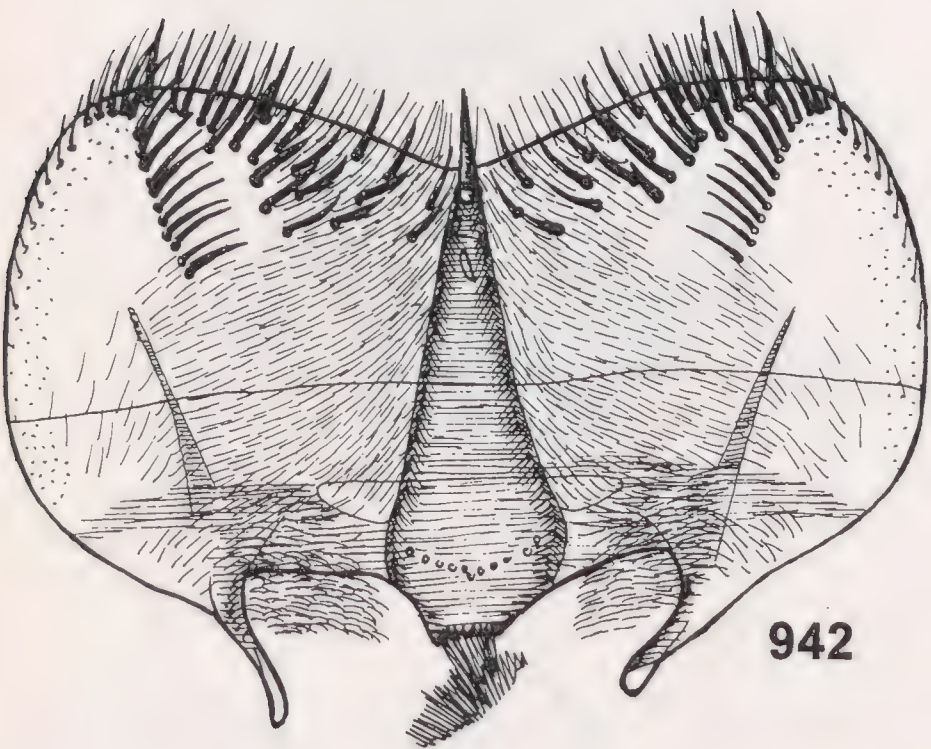
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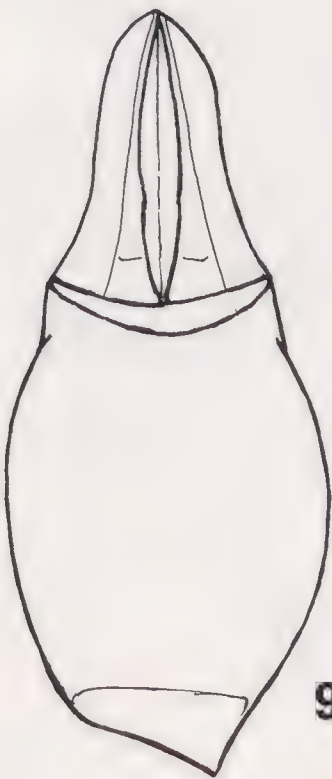
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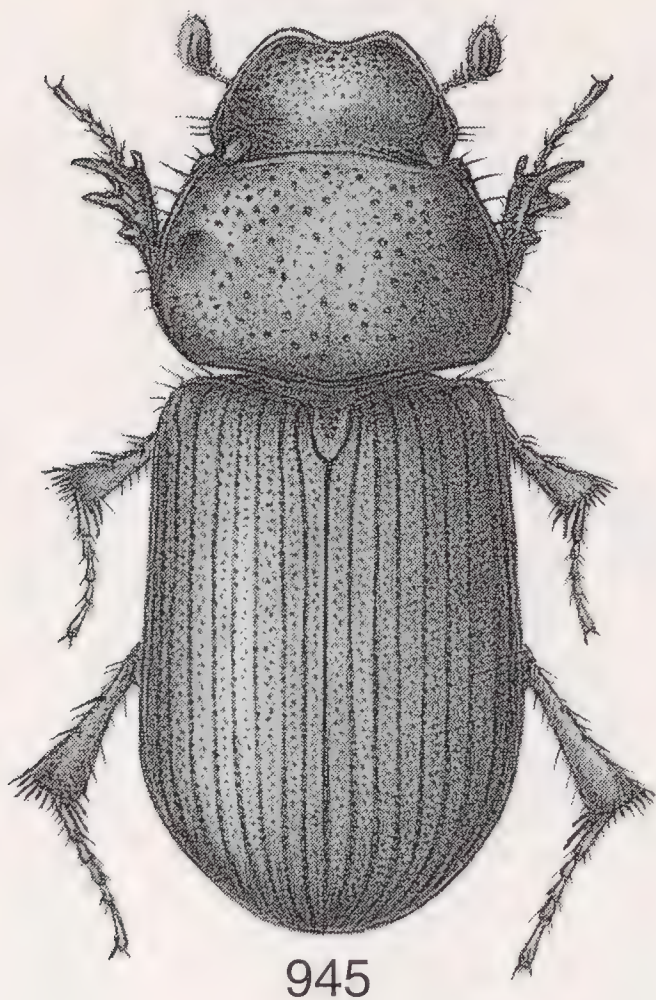


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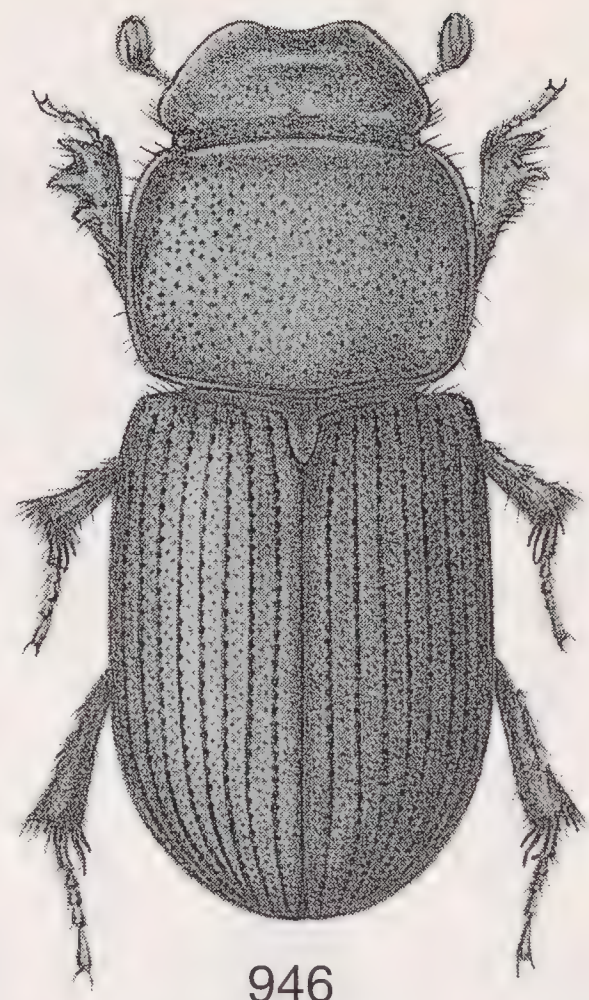


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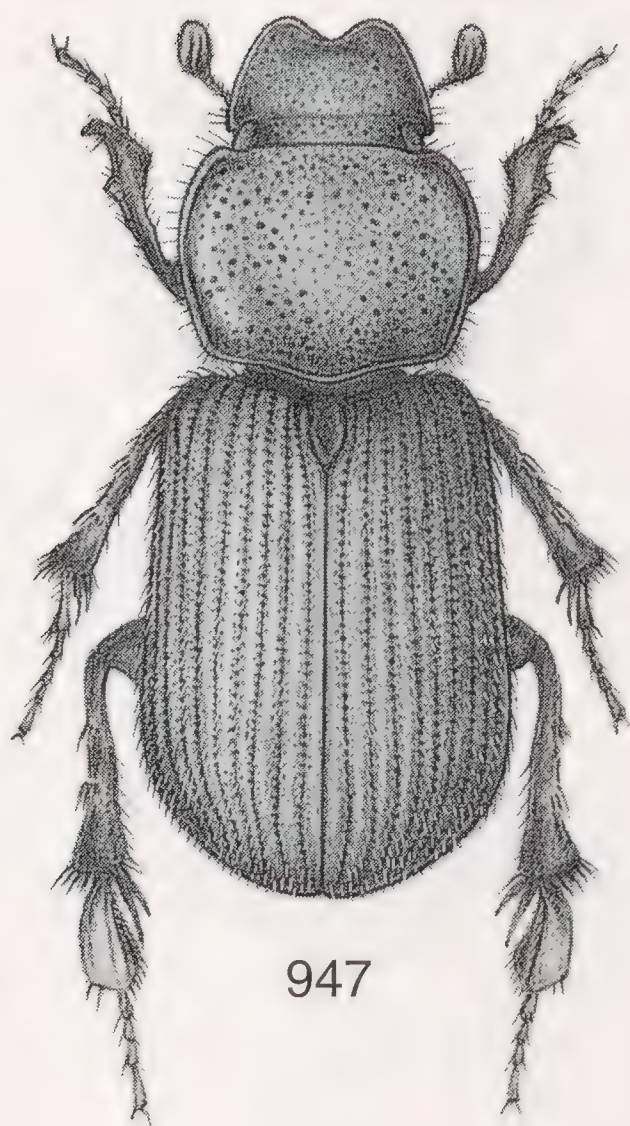
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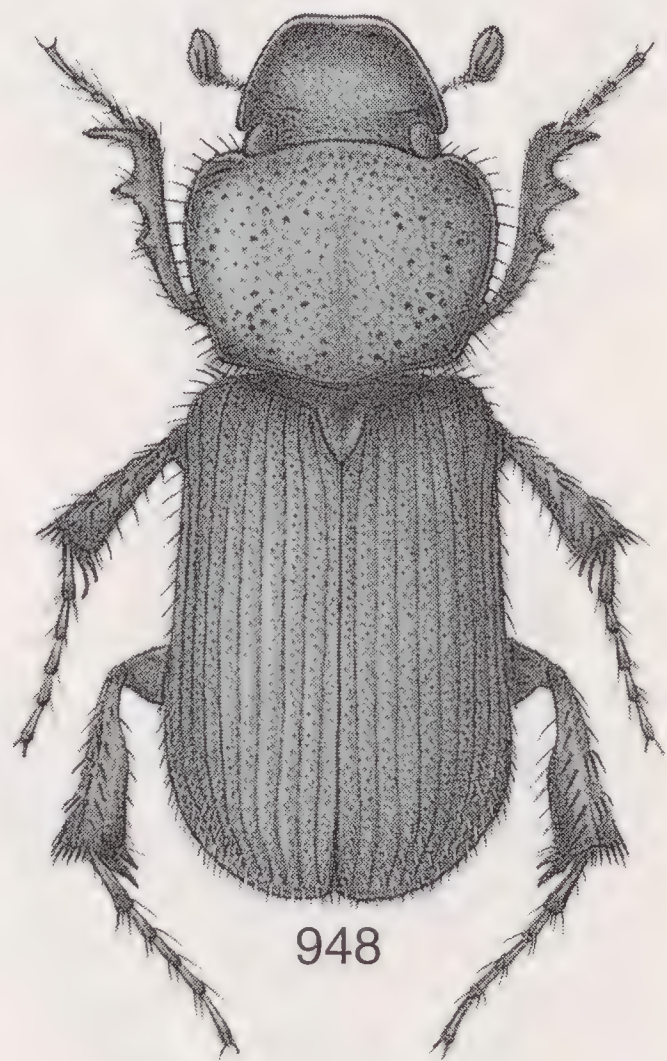
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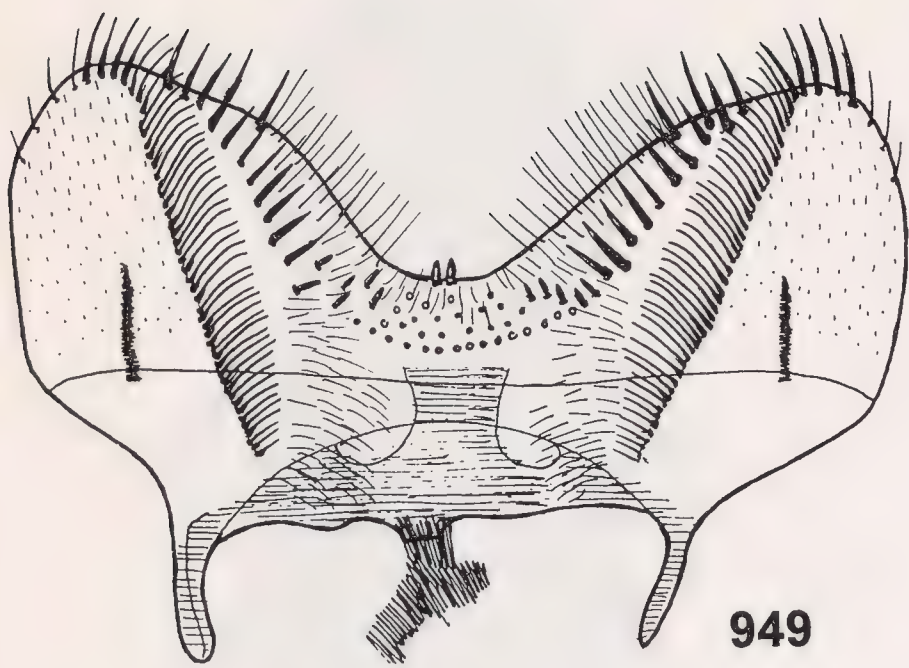
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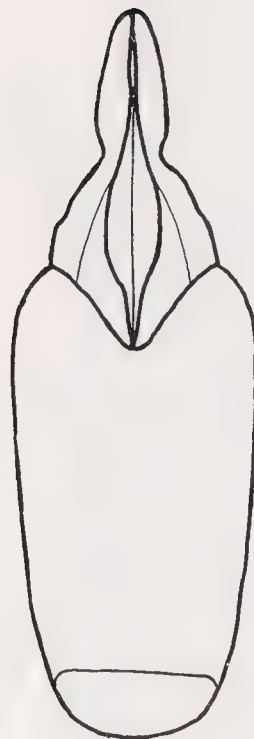
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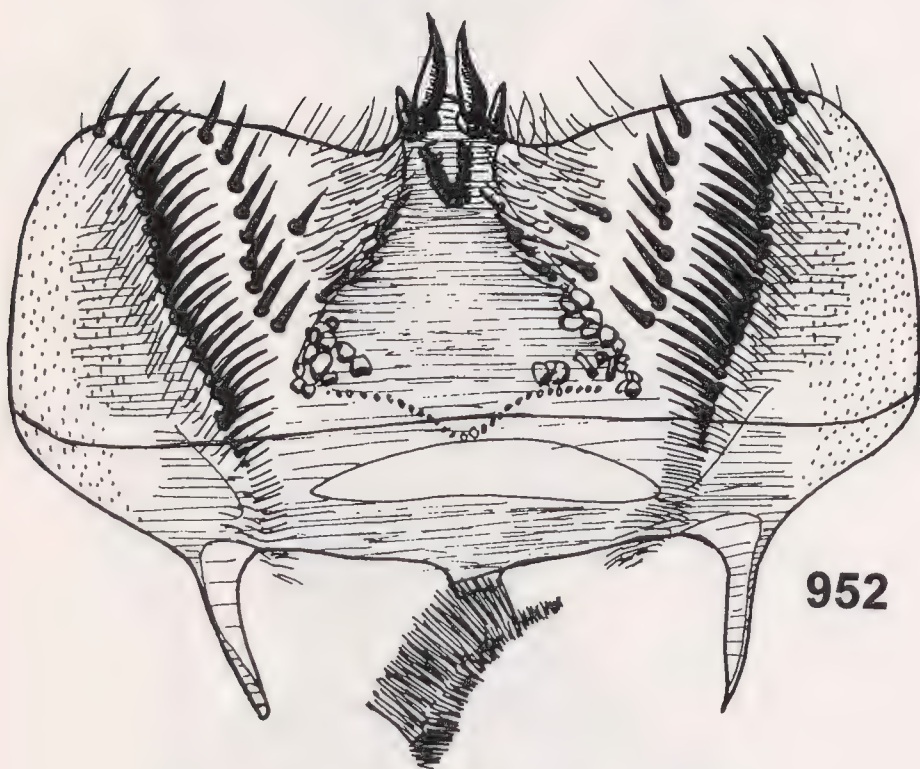
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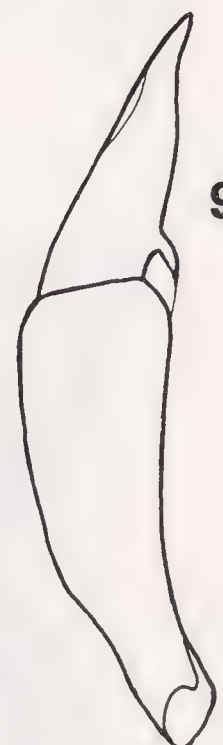
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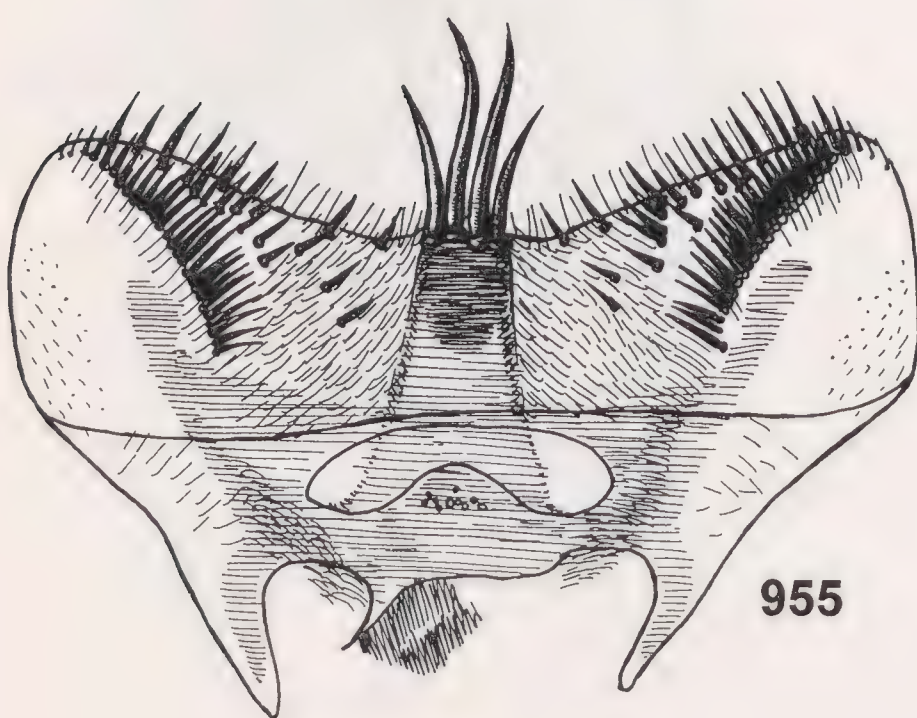
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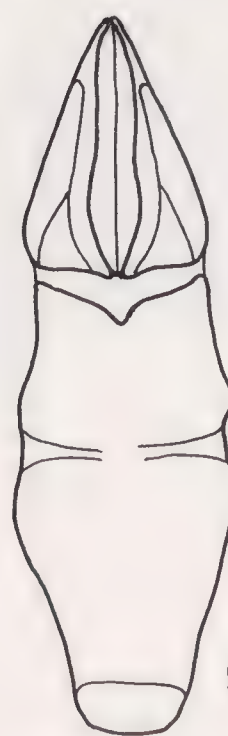
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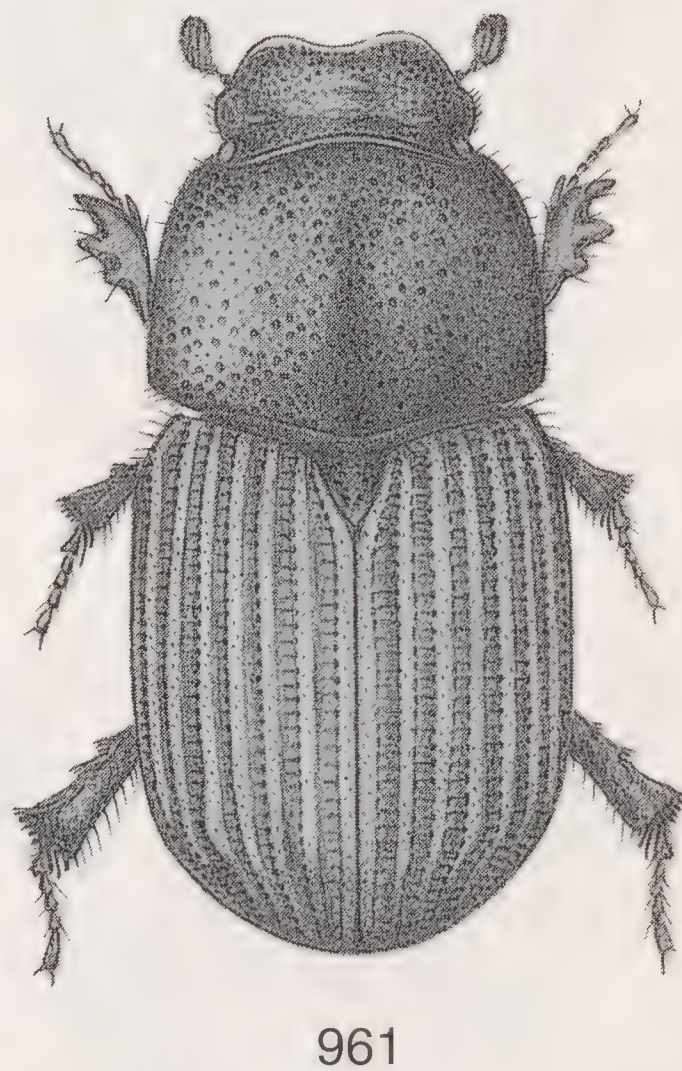
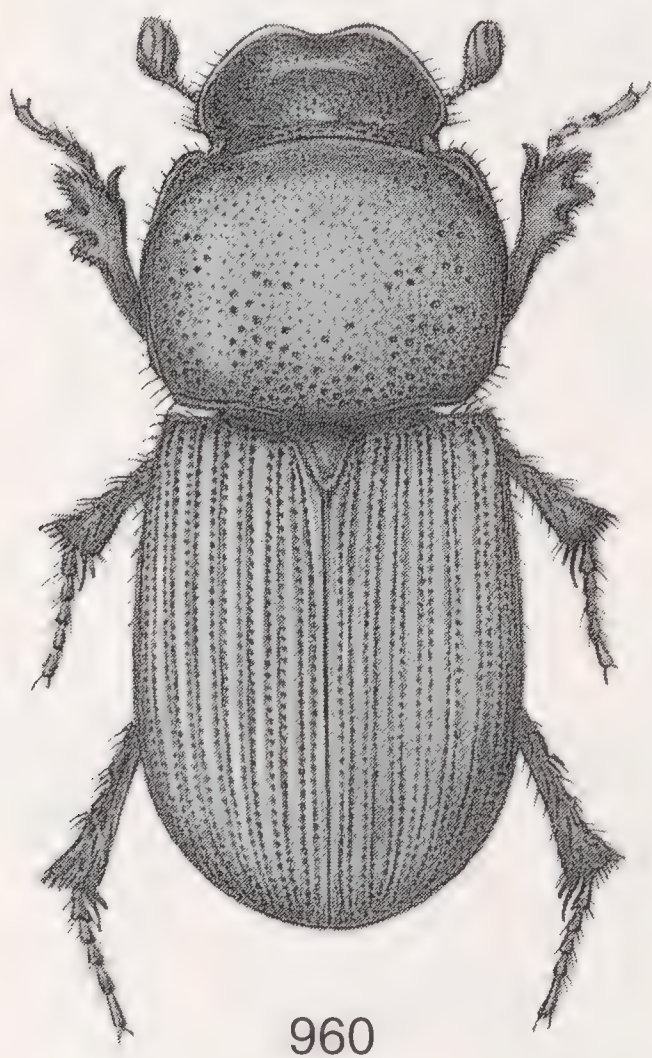
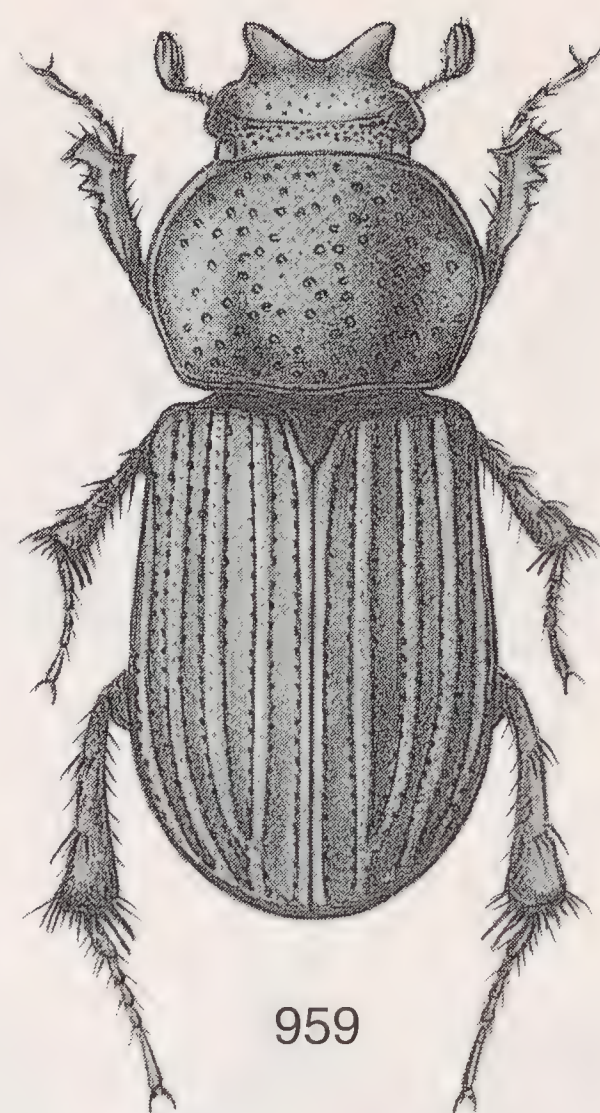
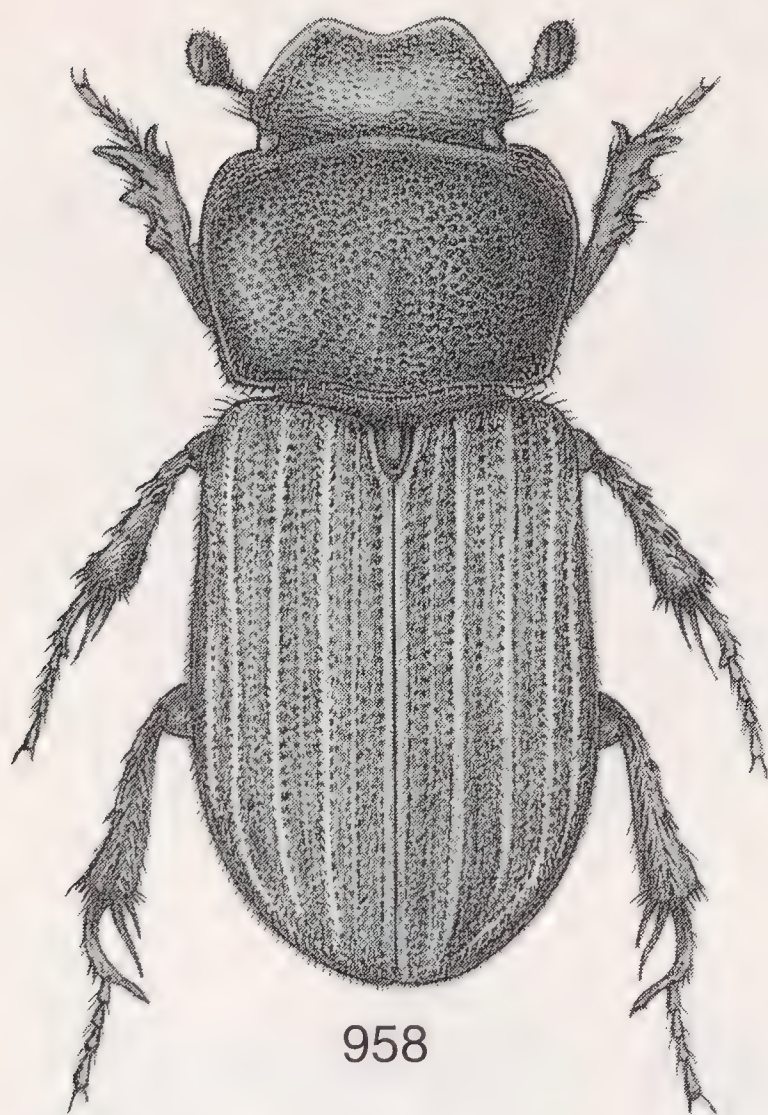
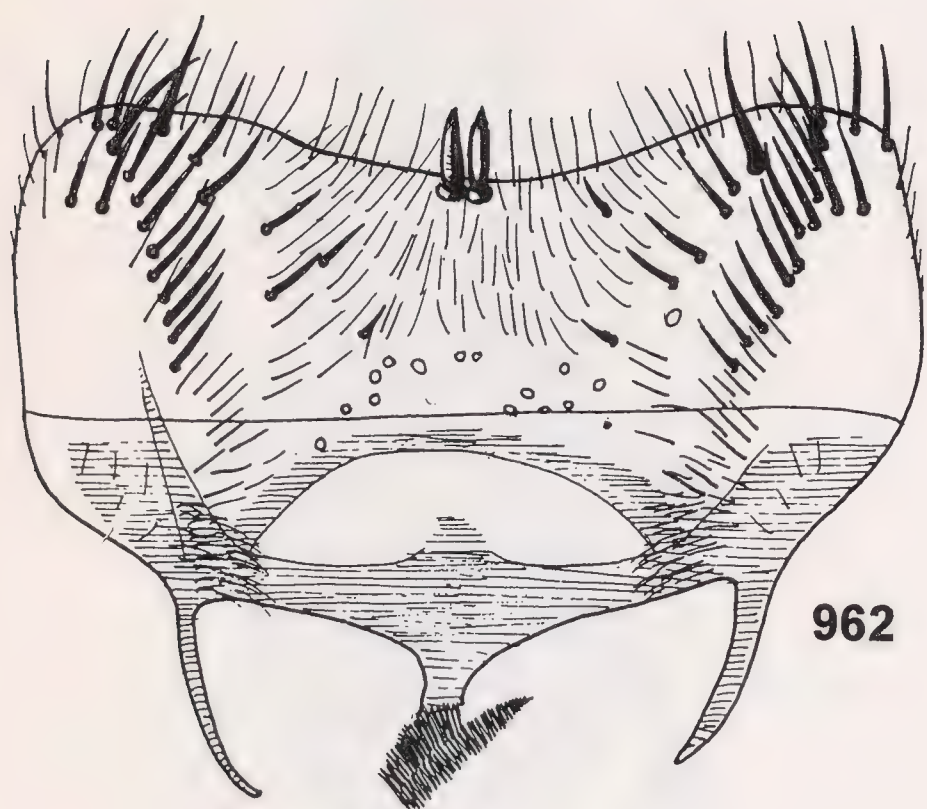


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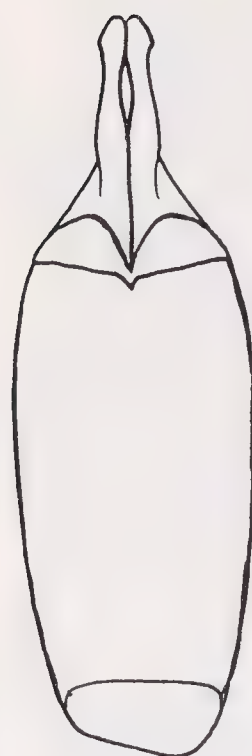
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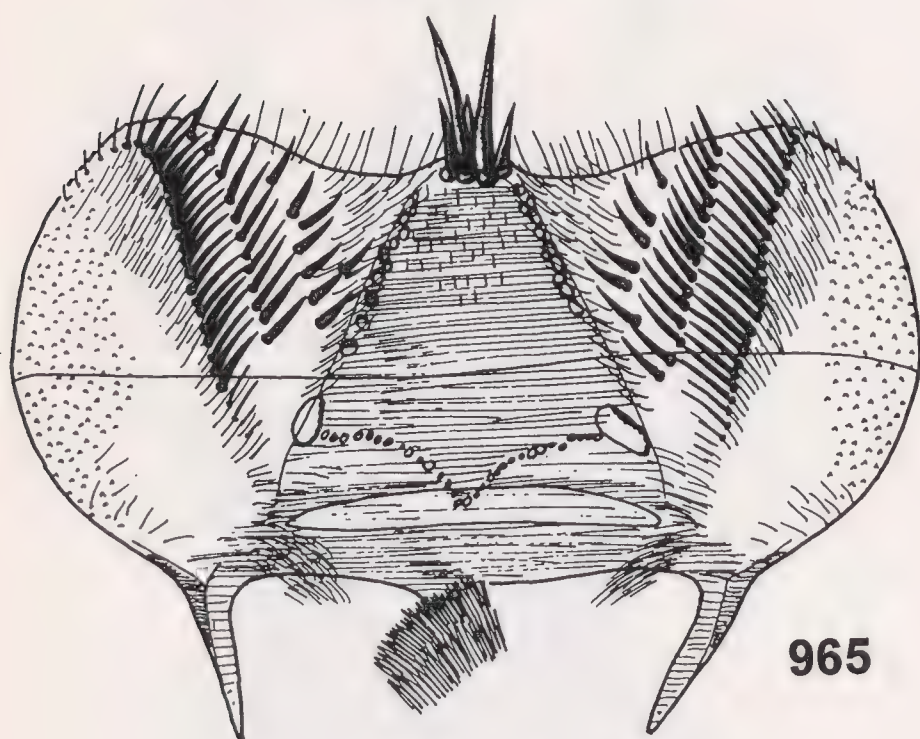
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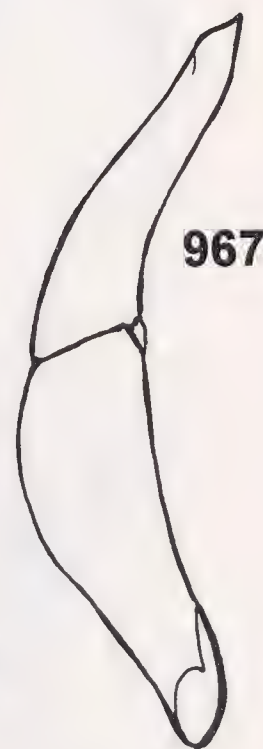
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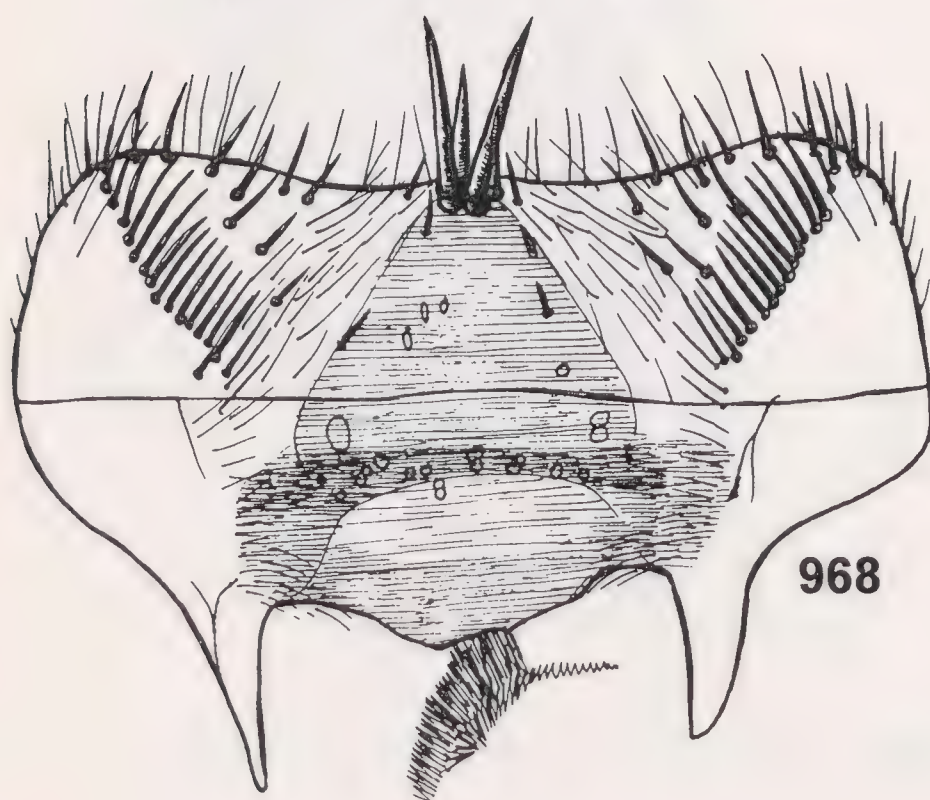
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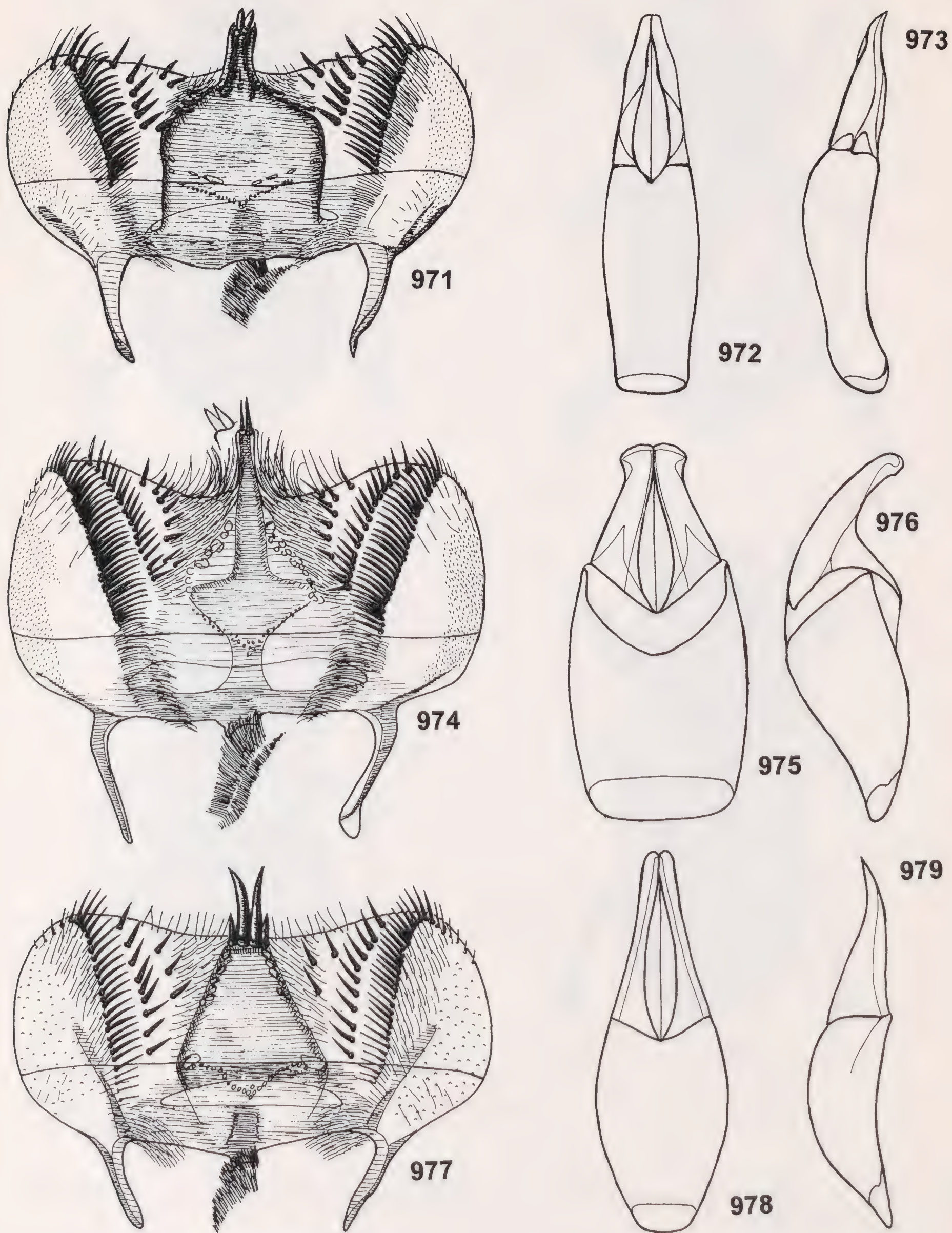


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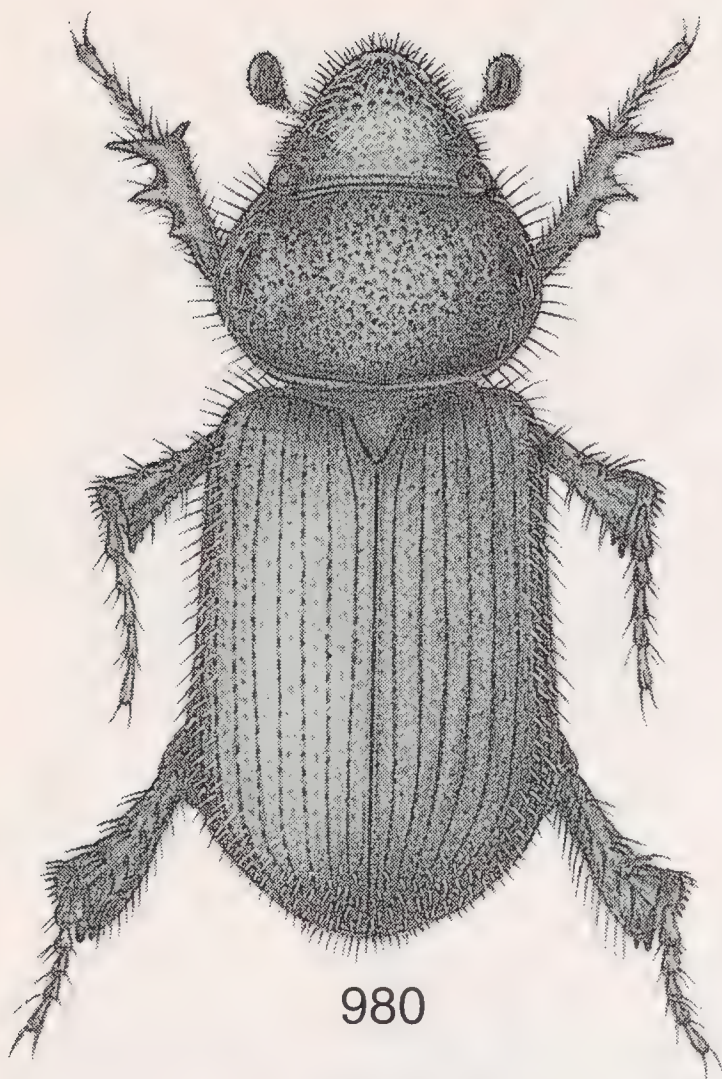


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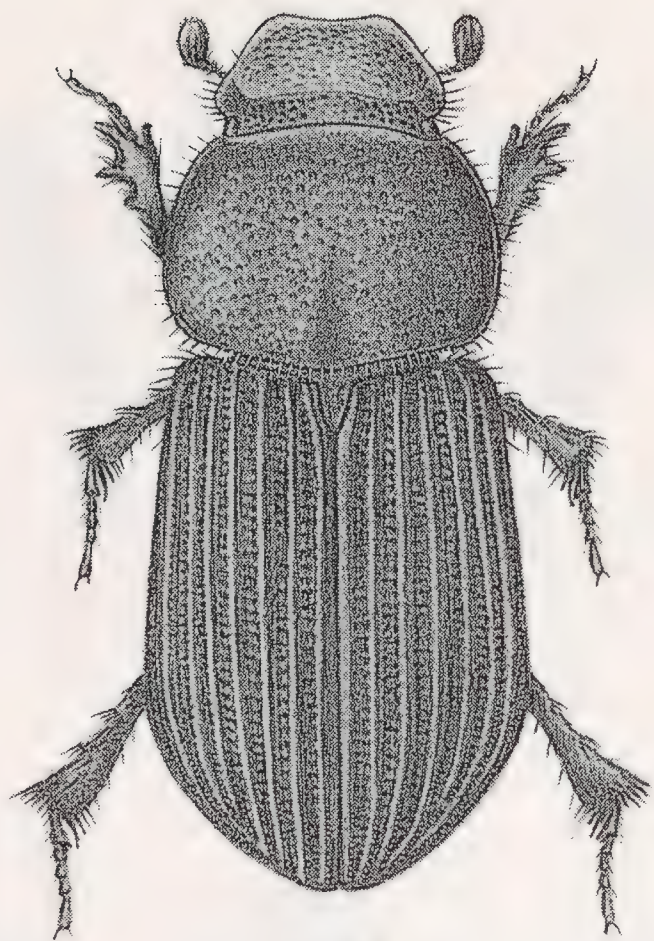
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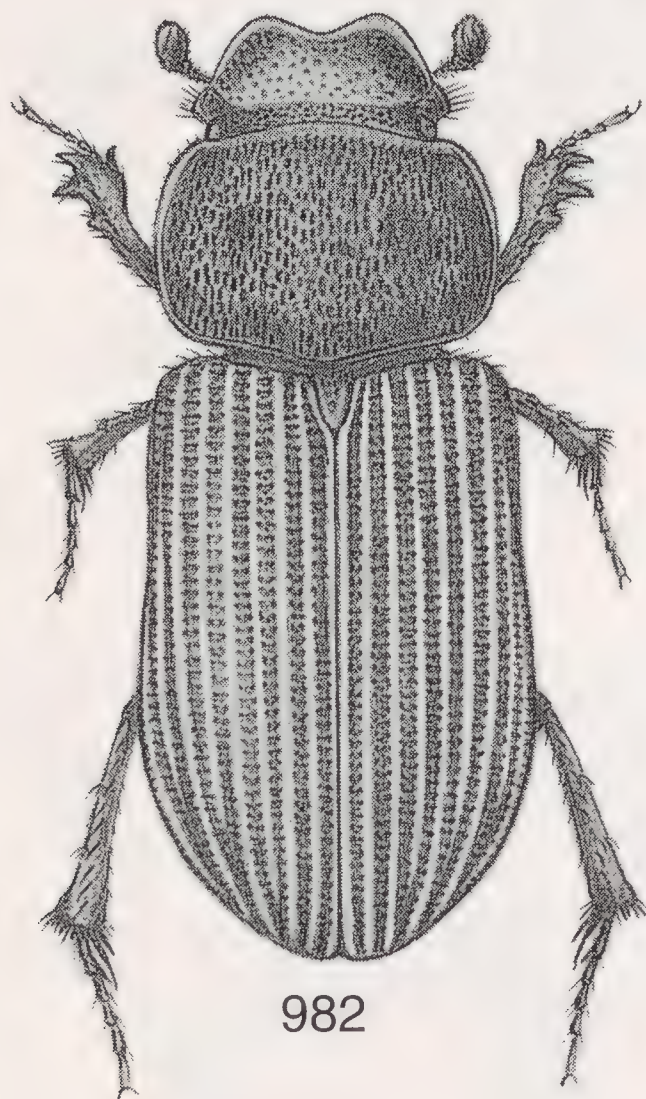
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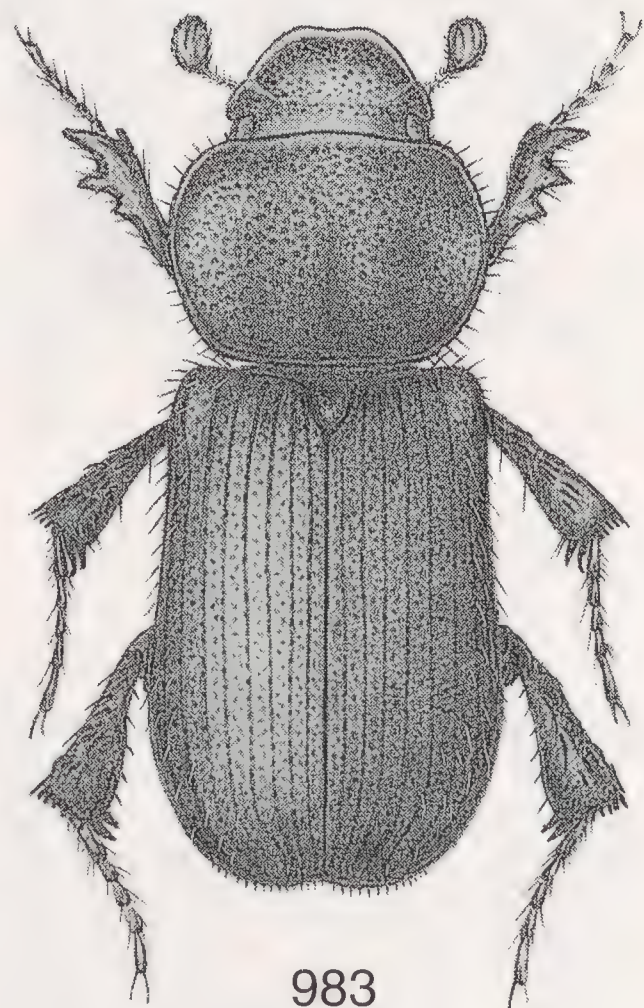
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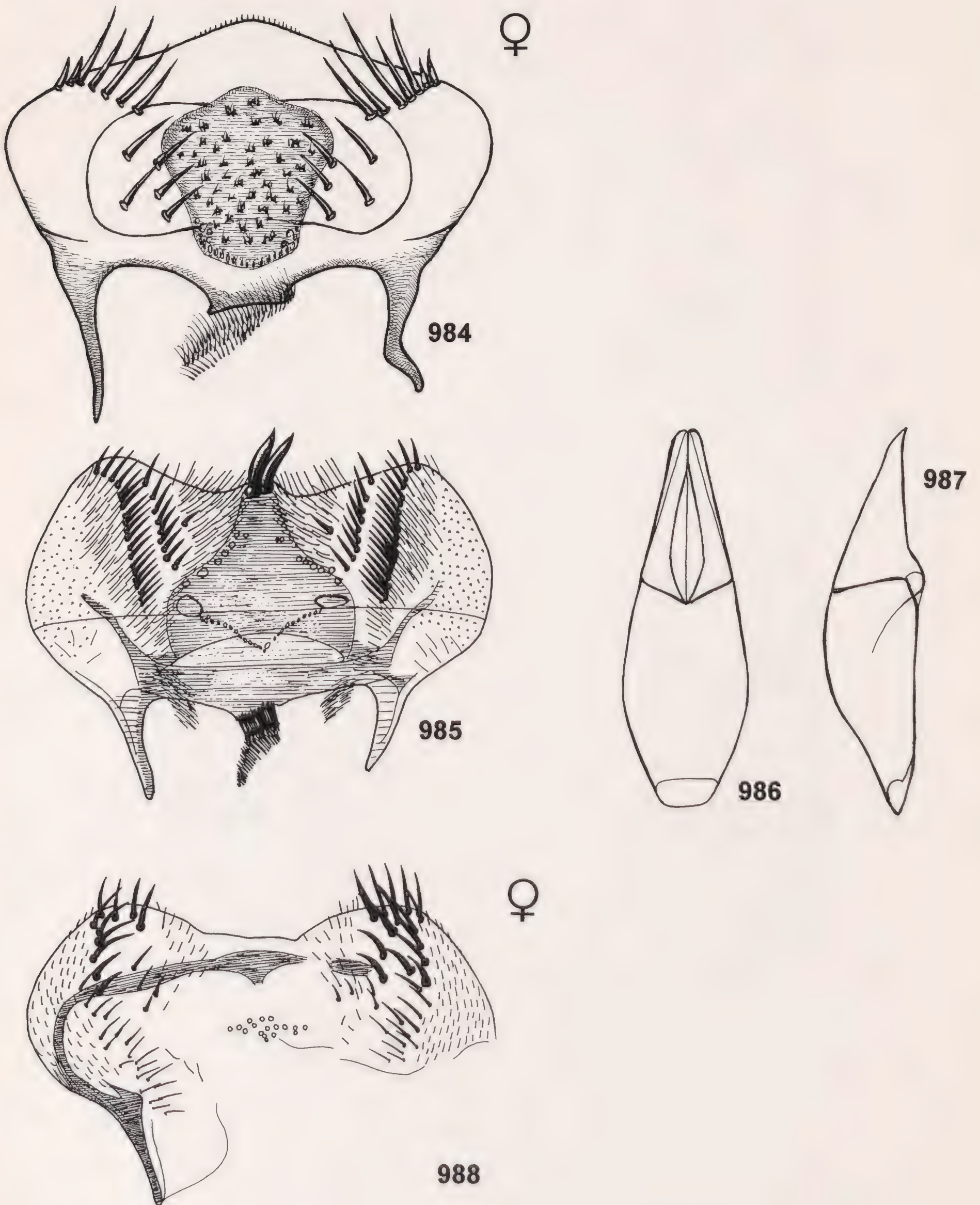
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